SOIL SURVEY

of

DIGBY COUNTY

Nova Scotia

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CANADA DEPARTMENT OF AGRICULTURE

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CONTENTS

	Page
Introduction	5
General Description of the Area	7
Location and Extent	7
History and Development	7
Population, Towns and Industries	7
Transportation and Markets	8
Factors Affecting Soil Formation in Digby County	9
Climate	9
Natural Vegetation	10
Soil Parent Materials	11
Relief	13
Drainage	13
Time	14
Classification and Descriptions of the Soils	15
Soil Development	15
Soil Survey Methods	16
Units of Classification	16
Descriptions of the Soils	17
Soils Developed from Moderately Fine Textured Glacial Till	17
Wolfville Series	18
Hantsport Series	19
Mahone Series	20
Soils Developed from Medium Textured Glacial Till	20
Bridgewater Series	21
Riverport Series	22
Middlewood Series	23
Soil Developed from Moderately Coarse Textured Glacial Till	24
Kentville Series	24
Mersey Series	25
Halifax Series	25
Gibraltar Series	26
Rossway Series	27
Yarmouth Series	28
Deerfield Series	29
Annapolis Series	29
Liverpool Series	30
Danesville Series	31
Bayswater Series	32
Roxville Series	32
Pitman Series	33
Seely Series	33
Aspotogan Series	34
Tiddville Series	35

55126-7—1½

PAGE

Soils Developed from Coarse Textured Stratified Parent Materials .. 35
Medway Series 36
Digby Series 36
Comeau Series 38
Meteghan Series 38
Soils Developed from Organic Materials 39
Sedge Peat 39
Sphagnum Peat 39
Miscellaneous Soils 39
Swamp 40
Salt Marsh 40
Coastal Beach 40

Agriculture and Land Use 41
Present Land Use 41
Management of Soils 42
Land Use Capability 44
Ratings of Soils for Crops 48

Discussion of Analytical Data 52

Summary 55

Glossary 56

TABLES

1 Mean monthly temperatures and precipitation 9
2 A key to the soils 17
3 Acreages and percentages of the total area 18
4 Acreages of occupied land 41
5 Acreages in field crops 41
6 Types and numbers of livestock 42
7 Series, descriptions and acreages of soils in Class II 46
8 Series, descriptions and acreages of soils in Class III 47
9 Series, descriptions and acreages of soils in Class IV 48
10 Series, descriptions and acreages of soils in Class V 49
11 Series, descriptions and acreages of soils in Class VI 49
12 Series, descriptions and acreages of soils in Class VII 50
13 Suitability for selected crops of soils in Classes II, III and IV 50
14 Chemical and physical analyses of representative soil profiles 53
15 Available nutrients in soil profiles 54

ILLUSTRATIONS

1 Location of the surveyed area (map) 6
2 Population trend, 1871-1956 (chart) 7
3 Monthly changes in precipitation and soil moisture (charts) 10
4 Geological formations (maps) 11
5 Flat-lying Triassic sandstone in the St. Mary's Bay area 12
6 Outline map of Digby County 14
7 Rolling to hilly topography on which soils of the Bridgewater series occur near Bear River 21
8 Potatoes growing on a soil of the Bridgewater series 22
9 Rock- and boulder-strewn beach on St. Mary's Bay 28
10 Soils of the Digby catena have developed on wave-washed gravel, underlain by compact marine sediments 37
11 The ox is still a beast of burden on some Digby County farms 42
12 Land-Use capability classes (map) 45

INTRODUCTION

This report deals with the soils of Digby County. The first section describes some of the physical and economic factors that affect the use of soils in the area and the factors affecting their formation. The latter part of the report describes the characteristics of the individual soils, their use and management and their place in the agriculture of the County. A map accompanying the report shows the locations and distributions of the soil series. Slope and stoniness phases within the soil series are also shown.

If you are interested in a particular piece of land, first locate the area on the soil map. The soil series have identifying names, colors and symbols that appear in the legend. To obtain information on a specific series, refer to the table of contents to locate the relevant section of the report. In this way you may get essential information about any particular kind of soil without reading the whole report. Further useful information about the various soils appears in the section on use and management of agricultural land in the County.

Readers who are interested in the wider aspects of soil conservation, wildlife conservation, highway planning, tax assessment or land settlement will find helpful information throughout the report.

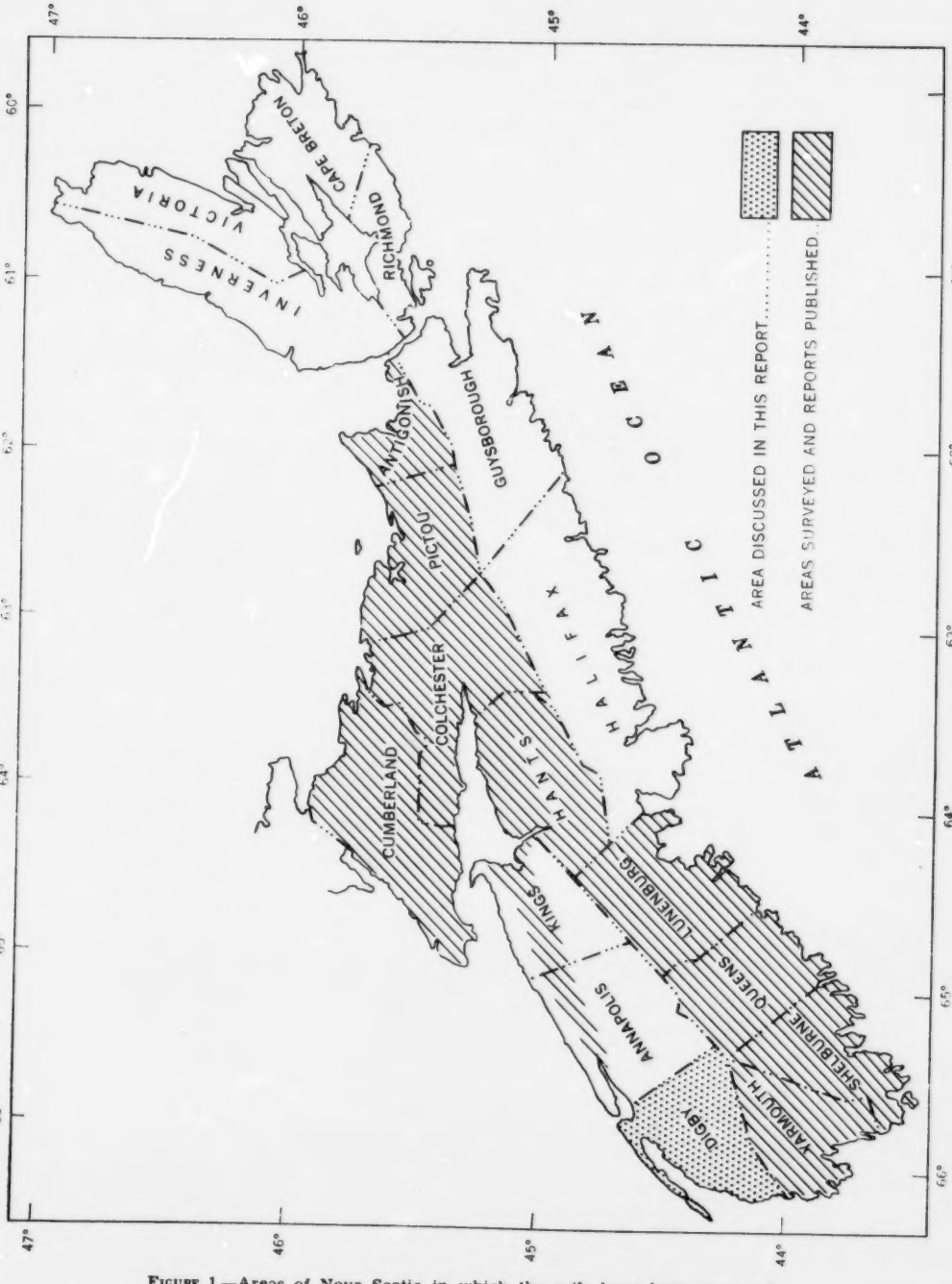

FIGURE 1.—Areas of Nova Scotia in which the soils have been surveyed.

GENERAL DESCRIPTION OF THE AREA

Location and Extent

Digby County is at the western extremity of Nova Scotia. It is bounded on the south by Yarmouth County, on the east by Annapolis County and on the north and west by the Bay of Fundy (Figure 1). The County lies between 44° and 44°40′ north latitude and 66°20′ and 65°20′ west longitude. It has an area of 668,179 acres, or 1,044 square miles.

History and Development

Digby County was first settled by the French in the 17th century and later by American settlers who arrived in 1776. However, the town of Digby and the surrounding area was not permanently settled until 1783, when United Empire Loyalists moved there from the United States. The District of Clare, which is now a part of Digby County, was also settled by the French. They, together with French settlers in other areas, were expelled from the province in 1755. Some returned later and today the District of Clare is largely populated by people of French origin.

The population of the County reached a peak of 20,300 about 1900 (Figure 2). It declined until 1930, but since then has increased fairly steadily to nearly the 1900 level.

Many natives of the County migrated to the United States and Ontario between 1900 and 1930. However, some of these returned in the years of depression that followed. The flow of Nova Scotians out of the province was slowed by less favorable conditions elsewhere.

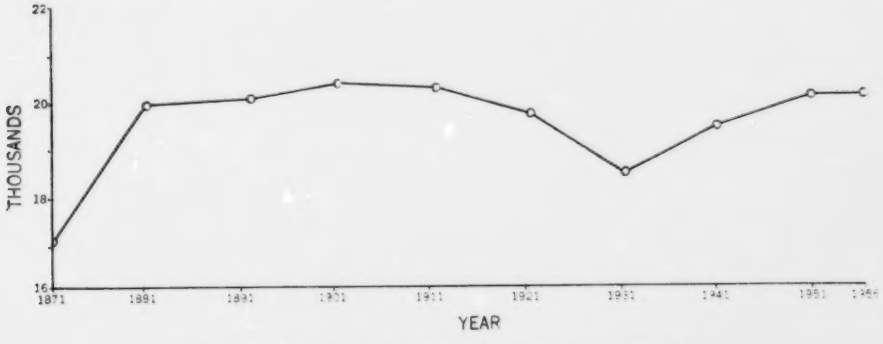

FIGURE 2.—Population trend in Digby County, 1871-1956.

Populations, Towns and Industries

The population of Digby County, according to the 1956 census, was 19,869, about 10 per cent of this number residing in the town of Digby. Most of the people live within a coastal strip five to ten miles wide. This extends from Annapolis County to Yarmouth County along the shore of St. Mary's Bay, and along Digby Neck from Digby town to Westport on Briar Island.

Weymouth, Meteghan, Freeport, Westport, Salmon River and Saulnierville are thriving villages on the coast. Farming, fishing, shipbuilding and the tourist industry are the main occupations here, whereas farming and lumbering are the main ones in the inland communities. Fish processing and the manufacturing of wood products are important secondary industries in the County.

Transportation and Markets

The western part of the County has adequate road and rail transportation facilities. The Dominion Atlantic Railway from Halifax to Yarmouth links Hectanooga, Meteghan, Church Point, Weymouth, Digby, Bear River and other small communities.

A network of highways and secondary roads serves areas not reached by the railway. A paved highway from Yarmouth to Halifax passes through nearly all the coastal villages, including Salmon River, Mavillette, Saulnierville, Church Point, Weymouth and Bear River. A branch highway from Digby joins the main highway at Jordantown. Another paved highway connects Digby with East Ferry, on the southwest end of Digby Neck. Ferries operate between Briar Island and Long Island and between Long Island and the mainland. Secondary roads connect inland communities with the larger coastal communities and main highways.

There are no roads through the granite areas in the southeast third of the County. From time to time logging trails are cut, but these seldom remain passable for long. Travel through the area is usually by canoe or on foot.

All points on the main highway through the County are served by Acadia Coach Lines and several transfer companies. There is a daily steamship service between Digby and Saint John, New Brunswick. The nearest airport, at Yarmouth, is a scheduled Trans-Canada Airlines stop for passenger and mail service.

Marketing of agricultural products is not a serious problem in the County. For most products the local demand exceeds the supply. Because of small-scale production and few storage facilities the farmers of the area cannot compete successfully with better-organized producers in the Annapolis Valley. Local production of vegetables, small fruits, etc., is not sufficient to meet the needs of the area.

Fishing is one of the most important industries and Digby scallops are noted for their quality and flavor. Both scallops and lobsters, taken in quantity from the coastal waters, bring a good price on the market.

FACTORS AFFECTING SOIL FORMATION IN DIGBY COUNTY

Soil formation depends upon the soil-forming factors: climate, vegetation, parent material, relief and time.

Climate

The climate of Digby County is humid temperate. Long-term climatic data are available from the weather station at Saulnierville, within the County, and from the Annapolis Royal weather station, in adjoining Annapolis County. Table 1 shows precipitation and temperature records at these two stations as compiled from reports of the Meteorological Division, Canada Department of Transport.

TABLE 1.—MEAN MONTHLY AND SEASONAL TEMPERATURES AND PRECIPITATION AT TWO STATIONS REPRESENTATIVE OF THE SURVEYED AREA

	Saulnierville (22 years)		Annapolis Royal (25 years)	
	Temperature	Precipitation	Temperature	Precipitation
	°F.	inches	°F.	inches
December	29	4.2	28	4.7 (20.6)[1]
January	26	3.8	24	4.2 (18.0)
February	24	3.2	23	3.4 (18.5)
Winter	26	11.2	25	12.3
March	32	3.3	31	3.3 (10.4)
April	39	2.9	41	2.8 (3.3)
May	48	2.4	51	2.3
Spring	39	8.6	41	8.4
June	56	3.2	59	3.0
July	61	3.2	64	3.4
August	61	3.1	64	3.0
Summer	59	9.5	62	9.4
September	56	3.9	58	3.2
October	49	3.9	50	4.2 (0.1)
November	39	3.6	39	3.9
Fall	48	10.4	49	11.3
Year	43	40.6	44	41.4 (74.8)

[1] Snowfall (10 inches of snow = 1 inch of rain).

The mean monthly temperature ranges from a high of 64° F. in summer to a low of 23° F. in winter. The longest frost-free period at Meteghan in 13 years was 172 days, the shortest was 103 days and the average was 142 days. The longest frost-free period at Digby in 36 years was 182 days, the shortest was 123 days and the average was 155 days. At Annapolis Royal there is an average of 5 hours of bright sunshine per day, or a total of 1,723 hours for the year.

The annual precipitation averages 40.6 inches at Saulnierville and is slightly higher at Annapolis Royal. There are no data available for snowfall at

Saulnierville, but an average of 75 inches of snow falls at Annapolis Royal each year. This represents 7.5 inches, or a fifth of the yearly precipitation. About 16 inches, or two fifths, of the annual precipitation falls during the growing season (May to October).

According to Thornthwaite[1] the effectiveness of precipitation may be measured in terms of the amount of water stored in the soil for plant use. An amount of water equal to 4 inches of rainfall is regarded as the maximum storage capacity in an average soil. Excess water results if rainfall exceeds evapotranspiration once the soil is at maximum storage capacity, and an excess is a usual occurrence in fall, winter and spring in the County. A deficiency of water may occur in summer. Figure 3, in which the records obtained at the two stations representative of the area have been treated by the method of Thornthwaite, illustrates the monthly changes in soil moisture conditions in an average year at Saulnierville and Annapolis Royal.

Figure 3 indicates that there is a moisture deficiency in the Annapolis area about the last of July and in August. On the average, there is no moisture deficiency at Saulnierville and the moisture storage is reduced only 2.79 inches during the summer months.

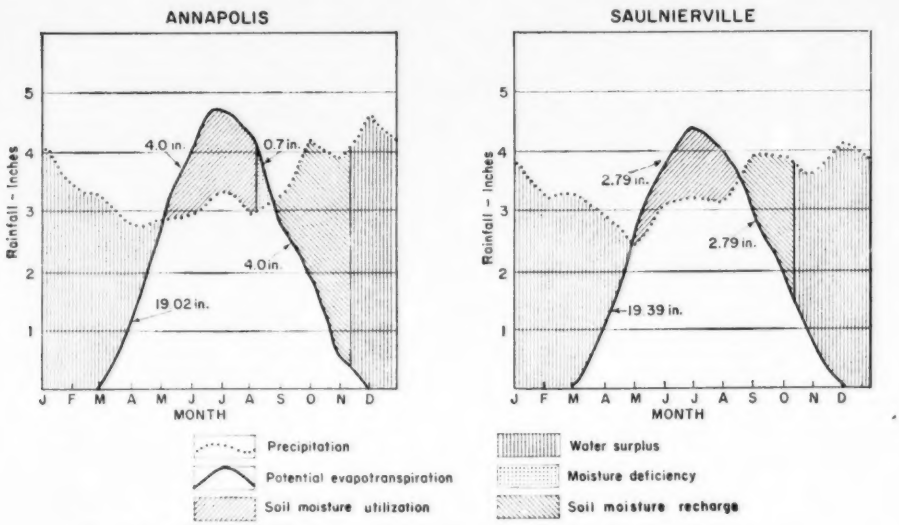

FIGURE 3.—Monthly changes in precipitation and soil moisture conditions at two stations representative of Digby County.

Since these diagrams are based on averages for a number of years they do not show seasonal variations that may occur in any one year. Then, too, critical deficiencies for certain crops may occur, whereas grain, hay, root and some vegetable crops may not be seriously affected.

Natural Vegetation

In most of the County the cover is mixed coniferous and deciduous trees. The well-drained soils on the ridges have a dominant cover of maple, birch

[1]Thornthwaite, C. W., An approach toward a rational classification of climate, Geogr. Review 38:55—94, 1948.

and beech. However, some fairly pure stands of red spruce, white spruce and fir occur. Pine is found throughout the area, usually on well-drained ridges or gravelly areas, and hemlock is relatively abundant in the mixed stands.

Imperfectly drained areas have stands that are predominantly red and black spruce, red maple, hemlock, fir and tamarack. Poorly drained soils are forested with red maple, fir, black spruce, tamarack and alder. Under very poor drainage conditions, peat bogs have formed. These are usually the beds of old lakes that have filled with sphagnum moss and sedges. Club moss, cattails and cotton grass also grow in these areas. Stunted black spruce and alder usually occur around the edges of the peat bogs and some small bogs are forested with black spruce.

On Digby Neck the ridges are covered with white spruce, maple, wire birch, wild apple and alder. Depressional areas have a dominant growth of black spruce, alder and sphagnum moss.

Soil Parent Materials

Practically all the soils of Digby County have developed from glacial drift. This material was deposited when Nova Scotia was last glaciated, some 10,000 years ago. As the glacial ice melted, the material held in the ice was deposited as glacial till. This till is made up of a heterogeneous mixture of gravel, sand, silt and clay picked up by the ice in its advance and redeposited

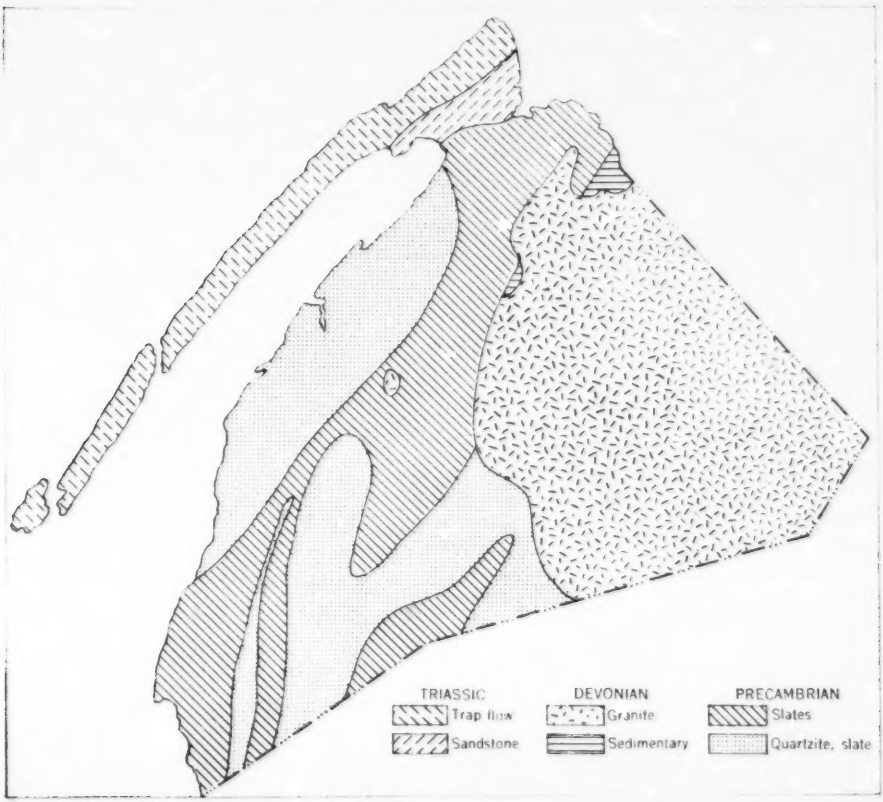

FIGURE 4.—Geological formations of Digby County.

when the ice melted. In Nova Scotia, the till is usually composed of materials derived from the underlying rock, and has not moved far from its point of origin. However, some of the material has been transported a considerable distance.

Streams that flowed from the glacier deposited water-sorted materials in the form of kames, eskers and outwash plains. These deposits are composed of coarse materials—gravel, sand, stones and boulders—and usually occur near existing rivers and streams.

Along the shore of St. Mary's Bay a narrow strip of wave-washed materials overlies a finer-textured deposit of marine sediments. Apparently an upwarping of the coast followed the retreat of the ice sheet. As the water line receded, gravels were left at the water's edge. These deposits range from 2 feet or less to 15 feet in thickness. The underlying finer-textured materials have been compacted by pressure to rocklike hardness.

The bedrock formations of Digby County are shown in Figure 4. The entire eastern third of the County is underlain by granite of Devonian age. Soil parent material derived from this type of rock is moderately coarse textured and very stony. The soils are usually shallow over bedrock and in some areas are too thin to support forest growth.

About half of the County is underlain by rocks of the Precambrian era. These are divided about evenly between quartzite of the Goldenville formation and slate of the Halifax formation. The quartzite has produced moderately coarse textured till that ranges in color from light olive gray to olive brown. Except in the area around Weymouth, the soils formed from quartzite materials are too stony for cultivation.

Shaly loam tills, yellowish brown in color, are common in the County. The largest area is south of Digby town and extends southwest in a narrow band, 2 to 10 miles wide, from Bear River to the coast. Another area is at Corberrie. Although some areas are too shallow or stony for agriculture, usually cultivation is not seriously hampered by large stones.

A small lowland area between the metamorphic rocks of the southern upland and the basic igneous rocks of Digby Neck is underlain by sandstone

FIGURE 5.—Flat-lying Triassic sandstone in the St. Mary's Bay area.

of Triassic origin. (Figure 5). Deep till derived from a mixture of trap, sandstone, slate and granite covers the lowland. This till is reddish brown and is moderately coarse textured. In this area, stoniness is not a serious obstacle to cultivation.

The lowland is bounded on the north by a long escarpment of Triassic trap rock that extends from Briar Island northeasterly to Cape Blomidon in Kings County. The formation is broken in three places by narrow sea passages. Two of these separate Briar and Long islands from each other and from the mainland. The third break is known as Digby Gap, where the tides of the Bay of Fundy pass in and out of Annapolis Basin.

Soils developed from trap-derived parent materials in this area are usually too shallow and stony for agriculture. The till is dark yellowish brown and ranges in texture from sandy loam to loam. Some fairly deep till occurs in the narrow valley between the north and south ridges of the escarpment. Soils on the ridges are extremely shallow with numerous rock outcrops.

Moderately fine-textured till occurs west of Bear River and near North Range. This till has apparently been derived from a mixture of slate, Carboniferous shales and mudstone. It is reddish brown and ranges in texture from sandy clay loam to clay loam. The soils developed on this material are relatively stone-free except for a few granite and quartzite erratics.

Relief

There are three well-defined landscape areas in Digby County. By far the largest is an undulating plain extending from Bear River to Yarmouth County and west to the shore of St. Mary's Bay. This plain rises gently from the coast to an elevation of just over 500 feet in the east-central upland. The physiographic variations in this area are mostly due to the underlying rock formations. The area underlain by granite in the eastern part of the County is made up of a series of low ridges, rarely rising more than 50 to 100 feet above the general level. Between these ridges are depressional areas, many of them occupied by peat bogs or sluggish streams. Areas underlain by quartzite are similar to the granite areas in general physiography except that the long axes of the low ridges have a northeast-southwest trend. Some of these ridges are due to the strike of the underlying rock; others are drumlinoid mounds of glacial till.

A long narrow lowland forming the southwestern extremity of the Annapolis Valley lies between the southern upland and North Mountain escarpment. A continuation of the lowland skirts the shore of St. Mary's Bay as a narrow coastal plain. The area is characterized by level to gently undulating topography, contrasting with the moderately undulating to hilly topography of the adjacent uplands.

The most outstanding landscape feature of the County is the long, narrow ridge of basalt forming Digby Neck, Long Island and Briar Island. Fault gaps separate the islands from the Neck and from each other.

Drainage

Streams of the south-central watershed drain southward into the Tusket River (Figure 6). Bear River drains north into Annapolis Basin, and the Sissiboo, Meteghan and Salmon rivers flow west into St. Mary's Bay.

In the granite and quartzite areas the streams are shallow and sluggish, with boulder-paved channels cut only slightly lower than the upland surface. However, these channels deepen abruptly to 100 feet or more where the streams cut through the more easily eroded slates and schists.

Time

It takes time to develop a mature soil from parent material. The rate and degree of development are also influenced by the climate, relief, and biological activity. These agencies have had 10,000 to 15,000 years to modify the materials left by glaciation. Thus most of the soils have reached a fairly mature stage in development. However, recent stream deposits and salt marshes are young soils, since periodic fresh deposits of sediment prevent the development of a soil profile. Marshland areas dyked for many years show the effects of soil-forming processes in the surface layers.

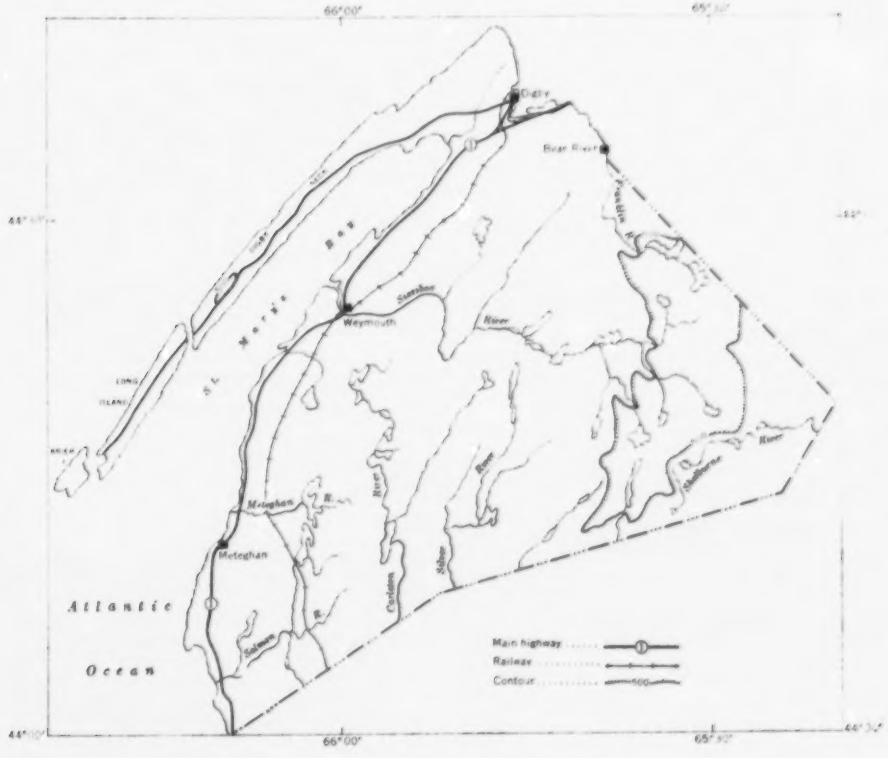

FIGURE 6.—Outline map of Digby County.

CLASSIFICATION AND DESCRIPTIONS OF THE SOILS

Soil Development

Under the influence of the various soil-forming factors, soluble salts as well as fine clay particles are leached downward. These are either deposited at lower depths or removed in the drainage water. This results in the formation of layers or horizons, parallel to the earth's surface, that differ in physical characteristics and chemical composition. A vertical section through these layers is called the soil profile.

The surface layer, or A horizon, is the part of the profile from which constituents have been removed. It is underlain by the zone of accumulation, the B horizon, in which materials from the A horizon have been deposited. The C horizon, underlying the B, is the unweathered material similar to that from which the upper horizons have developed. Subdivisions may be made within each horizon according to changes in observable characteristics.

The full effect of the soil-forming factors may be observed in soils that are developed on well-drained and moderately coarse textured parent materials. In Digby County such soils have an Ae horizon under a layer of partly decomposed organic matter (L-H). The Ae horizon is a bleached, light-colored layer from which bases, clay and iron and aluminum compounds have been removed. The B horizon is dark and usually somewhat finer in texture than the Ae. It contains the materials leached down from the A horizon. It may be designated as Bh, when humus is largely responsible for the color; Bf, when the coloring is caused largely by iron compounds; or Bhf, when both substances are responsible for the color. In some places this horizon is indurated or cemented and it may then be designated as Bhfc. The C horizon is usually lighter in color than the B and more firm or dense.

Soils having these characteristics are known as Podzols. A generalized profile is described as follows.

L-H	Black, semidecomposed organic matter; abrupt transition to Ae horizon.
Ae	Light-gray to pinkish-gray mineral soil; loose and friable.
Bfh	Dark-brown to reddish-brown mineral soil becoming lighter in color with depth; usually finer-textured than Ae
Bf	Yellowish-brown to light reddish brown mineral soil.
C	Unweathered parent material; various textures, colors and consistencies.

Another group of soils occurs in Digby County in which development has been restricted by lack of aeration and by poor drainage. These soils are usually found at the bases of slopes, on low-lying areas, or on more or less level land where a compact subsoil restricts the movement of water. In these soils some of the characteristics of the well-drained Podzol soil have been modified. Usually the L-H horizon contains more organic matter and is thicker. The Ae and B horizons may be mottled with gray and yellowish-brown because of reduction of the iron compounds in the presence of organic matter. This reduction process is known as gleying and the horizons are said to be gleyed and are indicated by attaching a suffix, g, to the main horizon designation.

These soils belong to a group known as Gleysols and a generalized profile is described as follows:

L-H	Black semidecomposed organic matter; frequently mucky in appearance.
Aeg	Dark-gray to dark reddish gray mineral soil; mottled with light and dark patches or splotches.
Bg	Light-brown to light reddish brown mineral soil; strongly mottled with gray or strong-brown colors; usually less strongly mottled with depth.
C	Unweathered parent material; usually firm to impervious; moderately to weakly mottled.

In the very poorly drained sites, the mottling colors may be much subdued and the lower horizons may be dull gray.

Another group of soils found in Digby County is made up of organic deposits. These occur in depressional areas and where the soil is saturated with water for most of the year. These soils do not have the well-developed horizons of the mineral soils, but rather a succession of layers of organic material, chiefly moss and sedges, in various stages of decomposition from the surface downward. Most of these soils are now classed as peat.

Along the present stream courses throughout the area, sediments have been deposited on flood plains. These materials have not had sufficient time to develop profile characteristics. They are immature soils, or Regosols.

Soil Survey Methods

A preliminary reconnaissance was made to determine the general characteristics of the County soils. This information served as a guide for describing and mapping the soils in the detailed reconnaissance survey that followed.

All roads and accessible trails in the area were used in the survey. Exposures were studied along the highways, in cultivated fields and in pits dug in forested areas. Notes on natural vegetation, soils, crops and possible land uses were recorded in detail for incorporation into this report. In cleared areas it was possible to check and map the soil boundaries accurately. Elsewhere boundaries were defined from aerial photographs and field observations made at widely separated intervals. The information is given on the two maps at a scale of one inch to one mile.

When mapping was completed, the principal soil series were sampled at each horizon, including the parent material, for chemical and physical analyses. These are given in the tables at the end of this report.

Units of Classification

The basic mapping unit used in the County was the soil series. A series is a group of soils developed from the same parent material and having the same kind and sequence of horizons. Series differing in characteristics due to drainage form a catena. The main soil types, or textures, are named in the map legend and the variations are discussed in the text.

In Table 2 the soils of the area are grouped into three broad classes: Podzolic, Gleysolic and Organic soils. Podzols are the main soils in the County. These soils display typical characteristics of the Podzol soil group as previously described. In the Gleysol group, development of podzol characteristics is prevented by poor drainage, and strong mottling or gleying occurs in the A and B horizons. The organic soils include sedge peat and sphagnum peat.

The soils in the vertical rows of the table have the same kind and arrangement of horizons in the profile, but differ in texture and lithology of

TABLE 2.—A KEY TO THE SOILS OF DIGBY COUNTY

Parent Material		Podzolic Soils		Gleysolic Soils	Organic Soils
		Podzols		Eluviated Gleysols	
Texture	Lithology	Orthic Podzols	Gleyed Podzols	Ferralitic Eluviated Gleysols	
Moderately fine textured glacial till	Reddish-brown till; indefinite origin	Wolfville	Hantsport	Mahone	
Medium-textured glacial till	Slate	Bridgewater	Riverport	Middlewood	
Moderately coarse textured glacial till	Red shale, sandstone, trap and granite	Kentville	Annapolis	Seely	
	Basic igneous rocks	Rossway	Roxville	Tiddville	
	Quartzite and slate	Halifax	Danesville	Aspotogan	
	Quartzite and schist	Mersey	Liverpool	Pitman	
	Mica and hornblende schist	Yarmouth	Deerfield	Pitman	
	Granite	Gibraltar	Bayswater	Aspotogan	
Coarse-textured outwash	Quartzite and schist	Medway			
	Slate, quartzite and schist	Digby	Comeau	Meteghan	
Organic deposits					Sedge peat Sphagnum peat

the parent materials. Horizontally, the soils have similar parent materials, but differ in profile characteristics due to drainage. Thus the Halifax, Danesville and Aspotogan soils are series members of a catena, the soils of which have developed from glacial till derived from quartzite and slate. From left to right in the table the soils go from well drained to poorly drained. This is accompanied by an increase in organic matter and nitrogen content.

The acreages of the various soils in Digby County are given in Table 3.

Descriptions of the Soils

Soils developed from glacial till occupy 89 percent of the County. About 81 percent of these soils are developed from moderately coarse textured materials, 18 percent are from medium-textured and less than 1 percent are from moderately fine textured materials. About 60 percent of the soils developed from till are well drained, 30 percent are imperfectly drained and 10 percent are poorly drained. All of the well-drained soils display the characteristics of Podzol soils. Where drainage is restricted these characteristics are modified.

Soil colors are described by names and symbols according to the standard Munsell color chart for soils. For example, 10YR 4/3 is the notation for dark brown; 5YR 4/3 is reddish brown, and so on. The colors given are for soils in the moist state.

Soils Developed from Moderately Fine Textured Glacial Till

Only soils of the Wolfville catena are in this group. They have developed from reddish-brown sandy clay loam to clay loam till, mixed with black and

gray shale and sandstone. In this group are the moderately well drained Wolfville series, the imperfectly drained Hantsport series and the poorly drained Mahone series.

TABLE 3.—ACREAGES OF THE SOILS IN DIGBY COUNTY AND PERCENTAGES OF THE TOTAL AREA

Soil Series	*Acres*	*Percentage of Total Area*
Wolfville	3,728	0.6
Kentville	2,502	0.4
Bridgewater	55,630	8.3
Yarmouth	858	0.1
Deerfield	1,171	0.2
Hantsport	370	0.1
Digby	9,954	1.5
Comeau	2,323	0.4
Annapolis	6,939	1.0
Mersey	9,190	1.4
Halifax	68,749	10.3
Riverport	33,333	5.0
Medway	2,202	0.3
Danesville	58,477	8.7
Liverpool	12,013	1.8
Roxville	8,269	1.2
Gibraltar	190,295	28.5
Rossway	36,474	5.4
Mahone	663	0.1
Seely	2,451	0.4
Meteghan	1,389	0.2
Pitman	6,221	0.9
Middlewood	8,704	1.3
Bayswater	57,184	8.6
Tiddville	2,118	0.3
Aspotogan	29,685	4.4
Sedgepeat	4,960	0.7
Sphagnum Peat	11,322	1.7
Swamp	3,123	0.5
Salt Marsh	1,446	0.2
Coastal Beach	410	0.1
Inland Water	36,026	5.4
Total	668,179	100.0

Wolfville Series (3,728 acres)

Soils of this series occupy gently undulating to rolling topography on the ridge west of Bear River and a small area at North Range. The surface texture is usually loam, grading into sandy clay loam to clay loam subsoil and parent material. The areas mapped in Digby County are relatively stone-free except for small slate and shale fragments which do not seriously interfere with cultivation. Surface drainage is adequate, but internal drainage may be restricted by the fine textured subsoil. Much of the Wolfville series is under cultivation. The remainder is under forest vegetation, which consists chiefly

of red and white spruce, fir, maple and birch. A profile taken in a forested location is described as follows:

Horizon	*Depth*	*Description*
L-H	2- 0 inches	Black semidecomposed leaf litter; F layer fibrous and felty; H layer black, fluffy mor; 2-4 inches thick; pH 3.8.
Ae	0- 1 inch	Light reddish brown (5YR 6/3) clay loam; weak, medium, subangular blocky structure; firm; sticky when moist; 1-3 inches thick; pH 3.8.
Bf_1	1-10 inches	Yellowish-red (5YR 4/6) sandy loam; medium crumb structure; friable and porous; 4-10 inches thick; pH 5.0.
Bf_2	10-20 inches	Yellowish-red (5YR 4/6) sandy loam; weak, medium, subangular blocky structure; firm; sticky when wet; 6-10 inches thick; pH 5.0.
C	20 + inches	Reddish-brown (5YR 4/4) sandy clay loam; firm in place; slightly mottled; sticky when wet; pH 5.4.

Utilization

The Wolfville soils are among the best agricultural soils in the County. Much of the area is farmed at present and those few areas still in forest are potentially good agricultural soils. To prevent erosion, steeper slopes should be kept in forest or permanent pasture. Plowing with the slope on these soils usually causes soil erosion and should be avoided if at all possible.

Agriculture on the Wolfville series is confined to dairying and mixed farming. The soils are suited to a fairly wide range of crops, such as hay, grain, roots, peas and beans. Their natural fertility is low and applications of commercial fertilizer are required for good growth. In addition, lime should be added from time to time to reduce the acidity. Without such treatment many of the more valuable crops will not grow well.

Hantsport Series (370 acres)

The soils of this series occupy gently undulating topography associated with the Wolfville and Mahone series. Surface drainage is adequate for the growth of some crops but internal drainage is restricted by the texture and firmness of the parent material and by relief. The soils are not too stony for cultivation and could be cleared and farmed. At present, however, a large proportion of the Hantsport series is covered by forest. This forest growth is largely red spruce, with some fir, red maple and birch. A profile is described as follows:

Horizon	*Depth*	*Description*
L-H	4- 0 inches	Black semidecomposed leaf litter; fibrous and felty; 3-7 inches thick; pH 4.0.
Ae	0- 3 inches	Light reddish brown (5YR 6/3) loam; weak, medium, crumb structure; slightly plastic; faintly mottled; 2-5 inches thick; pH 4.2.
Bfhg	3-13 inches	Yellowish-red (5YR 4/6) loam; medium crumb structure; friable; slightly plastic when wet; distinct gray to light yellowish brown mottles; 6-12 inches thick; pH 4.6.
BCg	13-17 inches	Strong-brown (7.5YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; firm; mottled; 3-6 inches thick; pH 5.0.
Cg	17 + inches	Reddish-brown (5YR 4/4) sandy clay loam; structureless; firm; mottled; numerous small fragments of slate and shale; pH 5.4.

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Surface textures in the Hantsport soils range from sandy loam to sandy clay loam and the subsoil from loam to sandy clay loam. There is a considerable amount of stone and gravel, particularly in the lower solum. Most of this stone is shale or slate fragments, but some granite and quartzite may be present as well. Mottling occurs throughout the profile, but is most pronounced in the lower B horizon.

Utilization

Only a small area of the Hantsport series occurs in Digby County and most of this is in forest. The soils are not suited to the wide range of crops that can be grown on the Wolfville soils, but can be used for hay, grain and pasture. They are capable of supporting good forest growth.

Mahone Series (663 acres)

The Mahone series occupies depressional to gently undulating areas associated with the well-drained Wolfville and imperfectly drained Hantsport series. Topography and firm to compact subsoil severely restrict both external and internal drainage. Practically all of the Mahone soils are forested. Vegetation consists chiefly of red and black spruce, tamarack, maple and alder. A loam profile is described as follows:

Horizon	*Depth*	*Description*
L-H	4- 0 inches	Grayish-black semidecomposed organic matter; F layer fibrous and felty; H layer black greasy mor; 4-8 inches thick; pH 3.5.
Aeg	0- 5 inches	Gray (10YR 6/1) loam; weak, medium, crumb structure; friable; mottled with pale-brown mottles; 3-6 inches thick; pH 3.8.
Bg	5-14 inches	Yellowish-brown (10YR 5/4) loam; weak, medium, subangular blocky structure; firm; mottled with strong-brown mottles; 4-12 inches thick; pH 5.0.
Cg	14 + inches	Dark yellowish brown (10YR 4/4) sandy clay loam; compact and nearly impervious; mottled; numerous small shale and slate fragments; pH 5.2.

The Mahone soils are strongly mottled throughout the solum and the upper C horizon. This gives the profile a very drab appearance. The texture of the surface soil is usually loam but sandy loam may occur. Subsoil textures range from sandy clay loam to clay loam.

Utilization

The Mahone soils are unsuitable for agriculture. A few acres could be cleared, drained and farmed, but are better left to forest.

Soils Developed from Medium-Textured Glacial Till

The only soils in Digby County in this class are those of the Bridgewater catena. Three series were mapped, namely, the well-drained Bridgewater, the imperfectly drained Riverport and the poorly drained Middlewood. These soils have developed from an olive-gray to dark-gray loam to shaly loam glacial till, derived from Precambrian slate. The till ranges from a few inches deep with frequent rock outcrops along the ridges, to several feet deep in the intervening valleys.

Where the soils have developed from nearly pure slaty materials, stone is not a serious hindrance to cultivation. However, there are many areas where granite and quartzite erratics make these soils unsuitable for farming.

Bridgewater Series (55,630 acres)

The soils of the Bridgewater series occupy about 9 percent of Digby County. They occur near Bear River, South Range, Weymouth Bridge, New Tusket, Corberrie, Meteghan River, Havelock, Danvers and Hasset. Topography ranges from gently undulating to rolling, the latter being the most common. Drainage, both external and internal, is fairly rapid, but occasional seepage spots occur where bedrock is near the surface.

Where forested, these soils support vigorous stands of hemlock, fir, white and red spruce, maple, beech, birch and poplar.

A profile taken from a forested area is described as follows:

Horizon	*Depth*	*Description*
L-H	2- 0 inches	Dark brownish black fibrous organic matter; F layer thin, matted mor; 2-3 inches thick; pH 3.5.
Ae	0- 2 inches	Pinkish-gray (7.5YR 6/2) silt loam; weak crumb structure; friable; 1-3 inches thick; pH 3.7.
Bfh	2- 4 inches	Dark reddish brown (5YR 3/3) silt loam; medium crumb structure; friable; 1-4 inches thick; pH 4.9.
Bf_1	4-13 inches	Strong-brown (7.5YR 5/6) loam; medium crumb structure; friable; 8-12 inches thick; pH 5.3.
Bf_2	13-23 inches	Dark yellowish brown (10YR 4/) sandy clay loam; friable; 8-12 inches thick; pH 5.3.
C	23 + inches	Light olive gray (5Y 6/2) loam; firm; numerous fragments of gray or black slate; pH 5.2.

Bridgewater soils in the coastal areas of Digby County have a relatively high organic matter content in the cultivated layer. Elsewhere in the province and a few miles inland from the coast in Digby, the organic matter content is normal for a well-drained soil. In the cultivated soils, granular structure is well developed, particularly under sod. The Ae horizon is often thin and is absent in some areas. When present it is usually structureless or has a weakly developed crumb structure.

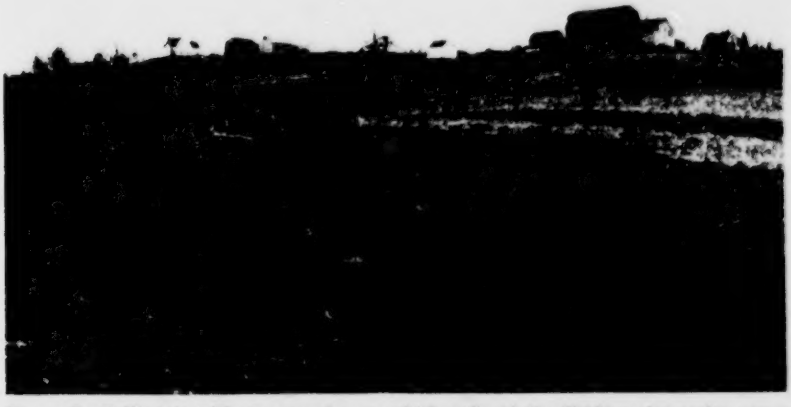

Figure 7.—Rolling to hilly topography on which soils of the Bridgewater series occur near Bear River. Clean cultivation may result in severe erosion of such areas.

The subsoil is a fairly uniform yellowish brown and has a well-developed fine to medium crumb structure in the upper B horizon. The lower B horizon is usually yellowish brown in color and loam to sandy loam in texture. In areas where the slate-derived parent materials are nearly pure, the lower B horizon may have an olive or olive-gray color. This horizon grades into a light olive gray to yellowish-brown parent material. Fragments of soft, weathered slate occur in the parent material and are usually present to a lesser degree throughout the solum.

Utilization

Agriculture on the Bridgewater series is largely confined to the smooth rolling ridges south and southwest of Digby town (Figure 7). The acreage under cultivation exceeds that of any other soil series in the County. Some areas are relatively stone-free but other, larger areas have a considerable amount of stone, both on the surface and throughout the solum. Many of these stones or boulders are granite and quartzite erratics carried by glacial action from adjacent areas. Rock outcrops and shallow areas occur in some sections and these areas are nearly all forested.

FIGURE 8.—Potatoes growing on a soil of the Bridgewater series.

Hay, grain and potatoes are the principal crops grown on the Bridgewater soils, but some acreage south of Digby town produces excellent vegetable crops when well managed. The soil is particularly well suited to the production of potatoes (Figure 8) and a considerable acreage is used for this crop. The vegetable and potato acreage could be increased if market outlets were expanded.

RIVERPORT SERIES (33,333 acres)

The Riverport series is found on gently undulating to gently rolling topography where the parent material, or bedrock, closely approaches the surface and prevents or impedes the downward movement of water. The soils resemble the Bridgewater series in many respects but are more drab throughout the solum and are mottled in the B horizon. Much of the Riverport series

is forested. It supports excellent stands of red and white spruce, red maple, hemlock, fir, poplar and wire birch. A sandy loam profile is described as follows:

Horizon	*Depth*	*Description*
L-H	4- 0 inches	Dark-brown, fibrous, poorly decomposed organic matter; 3-5 inches thick; pH 3.6.
Ae	0- 2 inches	Light-gray (10YR 7/1) sandy loam; porous and friable; medium crumb structure; 2-4 inches thick; pH 3.5.
Bfhg	2- 7 inches	Dark-brown (7.5 YR 4/4) sandy loam; fine crumb structure; friable; faintly mottled; 2-4 inches thick; pH 3.5.
Bfg	7-15 inches	Strong-brown (7.5YR 5/6) sandy loam; weak, subangular blocky structure; strong light gray mottling; some slate fragments; 6-10 inches thick; pH 4.8.
C	15 + inches	Light-olive (2.5Y 5/4) shaly loam; compact in place; numerous small slate fragments; pH 5.1.

The L-H horizon is usually thicker in the Riverport than in the Bridgewater series and there is general mottling throughout the solum. The parent material varies from olive to dark yellowish brown and in some areas is very dark colored, due to the weathering of black or gray slate.

Utilization

The Riverport soils are farmed in the St. Martin de Clare, Corberrie, New Tusket and other areas of the County. Where they are not too stony or shallow, they are not much different from the Bridgewater soils in agricultural use and potential. Hay, grain, potatoes and some roots grow well on the better areas. Elsewhere, granite and quartzite erratics on the surface make the soils too stony for agriculture. Very stony, shallow, or more poorly drained areas should be left in forest.

Middlewood Series (8,704 acres)

Soils of the Middlewood series occupy gently undulating to depressional relief associated with the Bridgewater and Riverport soils. Drainage ranges from poor to very poor and is usually due to topography, or to bedrock near the surface.

The soils are practically all forested and support a fair growth of red and black spruce, red maple, tamarack and alder. A profile is described as follows:

Horizon	*Depth*	*Description*
L-H	6- 0 inches	Black, fairly well decomposed organic matter; 3-11 inches thick; pH 3.5.
Aeg	0- 6 inches	Light olive gray (5Y 6/2) sandy loam; structureless; distinct strong-brown mottles; 3-8 inches thick; pH 3.7.
Bg	6-12 inches	Olive-gray (5Y 5/2) sandy loam; structureless; firm; distinct yellowish-brown mottles; 4-8 inches thick; pH 4.5.
Bg_2	12-16 inches	Olive (5Y 5/3) shaly loam; structureless; firm; brown mottles; 3-6 inches thick; pH 4.8.
Cg	16 + inches	Dark grayish brown (2.5Y 4/2) shaly loam; compact; mottled; pH 5.0.

The surface organic matter ranges from poorly decomposed peaty material to muck and may be up to 12 inches in depth. The gleyed B horizon sometimes rests on flat-lying bedrock at a depth of 10-15 inches from the surface.

Utilization

Middlewood soils are unsuitable for agriculture and should be left in forest.

Soils Developed from Moderately Coarse Textured Glacial Till

The soils of six catenas are included in this group. The well-drained series are: Kentville, Rossway, Halifax, Mersey, Yarmouth and Gibraltar. The imperfectly drained series are: Annapolis, Roxville, Danesville, Liverpool, Deerfield and Bayswater. The poorly drained ones are: Seely, Tiddville, Aspotogan and Pitman.

The Kentville, Annapolis and Seely soils have developed chiefly from red shale and sandstone till, although variable amounts of trap rock and granite materials may be present. Rossway, Roxville and Tiddville soils are derived from igneous rocks, chiefly basalt. The Halifax and Danesville soils have developed from quartzitic materials. Mersey, Liverpool, Yarmouth, Deerfield and Pitman soils have developed on sandy loam till, derived chiefly from schist. Some quartzite may be found throughout the profile, particularly in the Mersey and Liverpool soils. The Yarmouth and Deerfield series have developed on modified till derived from mica and hornblende schist. Gibraltar, Bayswater and Aspotogan have developed on coarse sandy loam to stony sandy loam till, derived principally from granite. Aspotogan soil, associated with the Halifax and Danesville series, has developed on quartzitic parent materials.

KENTVILLE SERIES (2,502 acres)

The Kentville soils occupy a relatively small area, near the town of Digby, but are important agriculturally. The topography ranges from moderately undulating to gently rolling. Surface drainage is rapid but subsoil drainage is restricted by the compact subsoil. A sandy loam is described as follows:

Horizon	*Depth*	*Description*
L-H	3- 0 inches	Brownish-black semidecomposed organic matter; F layer fibrous; H layer thin, fluffy mor; 2-4 inches thick; pH 4.2.
Ae	0- 2 inches	Pinkish-gray (7.5YR 7/2) sandy loam; structureless; porous; 1-4 inches thick; pH 4.7.
Bf_1	2-10 inches	Yellowish-red (5YR 5/6) sandy loam; weak crumb structure; friable; 6-10 inches thick; pH 4.8.
Bf_2	10-18 inches	Yellowish-red (5YR 4/6) sandy loam; weak, medium, subangular blocky structure; firm; slightly mottled; 6-10 inches thick; pH 5.2.
Cg	18 + inches	Reddish-brown (2.5YR 4/4) sandy loam; firm to compact; mottled; plastic when wet; small fragments of sandstone and trap rock; pH 5.2.

The surface or cultivated soil is usually a dark reddish brown (5YR 3/2) sandy loam high in organic matter, and has a strong, medium crumb structure. In some areas a thin Ah horizon is present. This layer is never more than two inches thick. Textures throughout the solum range from gravelly sandy loam to loam but sandy loam is the main surface texture. In much of the area a considerable amount of gravelly material may be found in the upper solum. This material contributes to the relatively coarse texture and porous nature of the upper horizons.

Utilization

The Kentville soils are classed among the best in the County and are suited to a wide range of crops. They are relatively stone-free and can be farmed with heavy machinery.

At present they are used chiefly for production of hay and grain. Small areas are used for root crops, small fruits and vegetables. The latter products do well on these soils and their production could be expanded.

A sound management program, including use of lime, manure and commercial fertilizers, should make these soils as productive as any in the province.

Mersey Series (9,190 acres)

The soils of the Mersey series are found in scattered small areas from St. Martin de Clare to Mayflower. They are relatively unimportant as agricultural soils and only a small acreage is farmed. They support good forest growth. Tree cover consists of red and white spruce, maple, poplar, hemlock and fir. A sandy loam profile is described as follows:

Horizon	*Depth*	*Description*
L-H	3- 0 inches	Grayish-black semidecomposed organic matter; F layer thick, fibrous; H layer thin, fibrous mor; 2-4 inches thick; pH 3.6.
Ae	0- 2 inches	Gray (10YR 6/1) sandy loam; structureless; friable; few stones; 1-3 inches thick; pH 3.8.
Bfh	2- 7 inches	Dark-brown (7.5YR 4/4) sandy loam; weak, fine, crumb structure; friable; 2-5 inches thick; pH 4.8.
Bf	7-14 inches	Strong-brown (7.5YR 5/8) sandy loam; fine crumb structure; friable; 6-10 inches thick; pH 5.0.
BC	14-22 inches	Light olive brown (2.5Y 5/4) sandy loam; structureless; slightly firm; 3-8 inches thick; pH 5.2.
C	22 + inches	Light olive gray (5Y 6/2) sandy loam; moderately firm; numerous fragments of schist and some quartzite; pH 5.4.

The Mersey soils are similar in many respects to the Halifax soils, but differ in geological origin and depth of profile development. They are mellow and friable throughout the solum and there is little compaction of the parent material. This permits rapid percolation of drainage water.

Utilization

The only area of the Mersey series used for agriculture is in the vicinity of Mayflower. Elsewhere these soils are forested and too stony for farming, although they are capable of producing all crops commonly grown in the area. They are sour and require lime and fertilizer for good crops.

Halifax Series (68,749 acres)

Soils of the Halifax series occupy about 11 percent of the County. They are associated with the imperfectly drained Danesville and the poorly drained Aspotogan series, with which they form an intricate pattern on the landscape. They occur near the coast in a belt several miles wide at the northern end above Weymouth and about 15 miles wide at the Yarmouth-Digby boundary.

Generally the Halifax soils in Digby County have a mounded topography. Small hummocks of fairly deep till are interspersed with imperfectly or poorly

drained, shallow and stony areas. These mounds have the general shape of drumlins, but are not as well formed as those in Yarmouth and Lunenburg counties. In general, excessive stoniness has made clearing of Halifax soils impractical and they have been left in forest. Near Weymouth, Little Brook and Ashmore they are less stony than average for the County and have been cleared for farming. Forested areas have a good growth of red and white spruce, pine, hemlock, maple, birch and oak. A profile of a sandy loam is described as follows:

Horizon	*Depth*	*Description*
L-H	2- 0 inches	Grayish-black semidecomposed organic matter; F layer felty; H layer thin, fibrous mor; 2-4 inches thick; pH 3.6.
Ae	0- 2 inches	Light-gray (10YR 7/1) sandy loam; weak crumb structure; friable; 1-4 inches thick; pH 3.8.
Bfh	2-10 inches	Strong-brown (7.5YR 5/8) sandy loam; medium crumb structure; slightly firm; 4-10 inches thick; pH 4.6.
Bf	10-20 inches	Light yellowish brown (2.5Y 6/4) sandy loam; structureless; moderately firm; porous; numerous angular quartzite fragments; 6-12 inches thick; pH 4.8.
C	20 + inches	Light olive gray (5Y 6/2) gravelly sandy loam; loose and porous; numerous angular quartzite fragments; pH 5.0.

In general, Halifax soils in Digby County have a sandy loam surface soil, overlying sandy loam to gravelly sandy loam subsoil. In the area between Little Brook and Ashmore the surface textures range from fine sandy loam to loam.

Utilization

A large proportion of the Halifax soils in the County are unsuitable for agriculture and should be left in forest. However, some areas have been cleared and these produce good crops under proper management. At present they are used for production of hay, grain, root crops and vegetables. The soils are very sour and are low in natural fertility. Maintaining an adequate program of liming and reasonably high levels of organic matter and fertility will ensure good crops.

Gibraltar Series (190,295 acres)

Soils of the Gibraltar series occupy over 25 per cent of the County, in a nearly solid block extending from a few miles south of Annapolis Basin to the Yarmouth-Digby boundary. This area is underlain by granite and the main soil series found is Gibraltar, but two less important series, Bayswater and Aspotogan, were mapped.

Gibraltar soils occur on moderately undulating to rolling topography and their most noticeable characteristic is a boulder- and rock-strewn surface. Large areas of Gibraltar soils are fire barrens and here the rock outcrops and boulders are more noticeable than in wooded areas. Where forested, the soils support a good growth of pine, fir, spruce, maple, birch and poplar. The entire area was evidently once covered by a good stand of timber. Repeated forest fires in inaccessible sections of the County have created these semipermanent fire barrens. It will be years before forests can be re-established on these areas.

A profile is described as follows:

Horizon	*Depth*	*Description*
L-H	4- 0 inches	Dark grayish brown semidecomposed organic matter; H layer fibrous mor; 2-5 inches thick; pH 3.5.
Ae	0- 3 inches	Light-gray (10YR 7/1) sandy loam; structureless; gritty; 1-4 inches thick; pH 3.8.
Bfh	3-10 inches	Dark-brown (7.5YR 4/4) sandy loam; fine crumb structure; friable; 3-8 inches thick; pH 4.5.
Bf	10-18 inches	Brown (7.5YR 5/4) sandy loam; structureless; firm; porous 5-10 inches thick; pH 4.6.
Bc	18-23 inches	Brown (10YR 5/3) sandy loam; structureless; firm; 4-10 inches thick; pH 4.6.
C	23 + inches	Pale-brown (10YR 6/3) sandy loam; firm; very stony; pH 4.8.

The cultivated layer is dark grayish brown sandy loam. Usually a fine to medium crumb structure is developed where the organic matter content is maintained at a fairly high level. The B horizon is usually firm and overlies a loose, stony or gravelly parent material.

Utilization

Gibraltar soils are of no importance for agriculture. Only a few acres have been cleared for rough pasture or gardens where other soils were not available. Though not too many rock outcrops occur, large granite boulders make farming of these soils impractical.

Rossway Series (36,464 acres)

This series occurs on moderately undulating to hilly topography on Digby Neck, Long Island and Briar Island (Figure 9). The soils are extremely stony or shallow in most of the area. Some sections are too shallow to support forest, although only a few inches of soil over bedrock is usually adequate for tree growth. Where there is sufficient soil, white spruce, maple, fir, birch and poplar grow well. Where the soil is very thin, vegetation is stunted or limited to heath. A profile of a sandy loam is described as follows:

Horizon	*Depth*	*Description*
L-H	4- 0 inches	Black (10YR 2/1) semidecomposed organic matter; F layer matted, fibrous; H layer friable, fluffy mor; 2-6 inches thick; pH 3.5.
Ae	0- 1 inch	Pinkish-gray (7.5YR 6/2) sandy loam; weak platy structure; friable; 0-3 inches thick; pH 4.6.
Bfh_1	1- 4 inches	Dark reddish brown (5YR 3/4) sandy loam; fine crumb structure; friable; 2-6 inches thick; pH 4.9.
Bfh_2	4-12 inches	Dark grayish brown (10YR 4/2) sandy loam; fine crumb structure; stony; 4-10 inches thick; pH 5.0.
BC	12-20 inches	Dark yellowish brown (10YR 4/4) sandy loam; fine crumb structure; friable; stony; 6-12 inches thick; pH 5.3.
C	20 + inches	Dark yellowish brown (10YR 4/4) stony sandy loam; loose and porous; many fragments of trap rock materials; pH 5.9.

Where cultivated, the surface soil is very dark grayish brown (10YR 3/2) sandy loam. It has a medium crumb structure and is very friable. The subsoil has a fairly uniform dark yellowish brown color throughout and rests on bedrock or on a dark yellowish brown cobbly to gravelly sandy loam parent material.

FIGURE 9.—Rock- and boulder-strewn beach on St. Mary's Bay. Soils of the Rossway series occur on the hills in the background.

Utilization

In Digby County only a small proportion of the Rossway soils are suitable for farming. Rock outcrops occur too frequently to make extensive cultivation practical. Stoniness, topography and depth to bedrock all limit the use of these soils. In the scattered small areas where conditions are more favorable, crops can be grown successfully. Existing farms are small and not generally suited to commercial dairy, beef or sheep production. However, higher production of poultry, hogs, dairy products for home use, small fruits, potatoes and some vegetable crops is possible in the area.

YARMOUTH SERIES (858 acres)

In Digby County, Yarmouth soils occur on undulating to rolling topography between Beaver River and Woodvale. Although mostly cleared and farmed, they total only a little over a square mile in area and are relatively unimportant agriculturally. Where they are forested, spruce, fir, birch, maple and poplar occur. A sandy loam is described as follows:

Horizon	*Depth*	*Description*
L-H	2- 0 inches	Black semidecomposed organic matter; H layer thin, fibrous mor; pH 3.5.
Ae	0- 2 inches	Light-gray (10YR 7/1) sandy loam; structureless; friable; 1-4 inches thick; pH 3.8.
Bfh	2- 8 inches	Reddish-brown (5YR 4/4) sandy loam; medium crumb structure; friable; 4-8 inches thick; pH 4.7.
BC	8-20 inches	Yellowish-brown (10YR 5/4) sandy loam; slightly firm; structureless; light mottling; 8-15 inches thick; pH 5.0.
C	20 + inches	Light yellowish brown (10YR 6/4) sandy loam; compact; numerous schist fragments; pH 5.2.

The cultivated layer is a dark grayish brown sandy loam. It is usually high in organic matter and has a well-developed granular structure. The lower B horizon is usually mottled and the parent material is compact, restricting subsoil drainage.

Utilization

Most of the Yarmouth soils in Digby County are in agricultural use. Grain and some roots are grown but hay is the main crop. The soils are suitable for a wide range of crops. A sound management program, utilizing lime, commercial fertilizers and barnyard manure, should make these soils as productive as any upland soils in the province.

Deerfield Series (1,171 acres)

The soils of the Deerfield series are found in association with the Yarmouth and Pitman soils in the southwest corner of the County. They occur on gently undulating to gently sloping topography. Drainage is restricted by a compact, nearly impervious parent material, giving rise to numerous seepage spots on the slopes. The soils are not excessively stony in Digby County and most areas could be farmed. Where forested they support a good growth of red spruce, fir, red maple and birch. A sandy loam profile is described as follows:

Horizon	*Depth*	*Description*
L-H	2- 0 inches	Dark grayish brown, partly decomposed organic matter; F layer thin, fibrous; H layer black, greasy mor; 1-4 inches thick; pH 3.5.
Ae	0- 4 inches	Brown (7.5YR 5/2) sandy loam; medium crumb structure; friable; 2-6 inches thick; pH 4.6.
$Bfhg_1$	5-13 inches	Dark-brown (10YR 4/3) sandy loam; medium crumb structure; strong-brown mottles; 5-10 inches thick; pH 4.8.
$Bfhg_2$	13-20 inches	Olive-brown (2.5Y 4/4) sandy loam; structureless; slightly firm; mottled; 4-10 inches thick; pH 5.0.
Cg	20 + inches	Olive-gray (5Y 5/2) sandy loam; compact; mottled; pH 5.0.

The cultivated layer is a dark grayish brown sandy loam. Usually this layer is high in organic matter and has a well-developed granular to crumb structure.

Utilization

Practically all of the Deerfield soils in the County are used for hay and pasture. Stoniness is not a serious problem on these soils and besides hay they are suitable for grain, some roots, vegetables and small fruits. For improvement, they require lime and fertilizer and in some areas tile or open-ditch drainage would be beneficial.

Annapolis Series (6,939 acres)

Soils of the Annapolis series occur on gently undulating to gently rolling topography and are associated with soils of the Kentville series. They are found in the lowlands west and northwest of Digby town.

Imperfect drainage in the Annapolis series is due to a compact, impervious subsoil. Where there is sufficient slope to allow rapid surface runoff, this does not seriously interfere with cultivation. In many areas, however, water lies near the surface for long periods and severely restricts root development.

A fairly large proportion of the Annapolis soils in the County are under cultivation. The areas in forest support a good growth of mixed coniferous and deciduous trees, chiefly wire birch, poplar, red and black spruce, tamarack and red maple. A sandy loam profile is described as follows:

Horizon	*Depth*	*Description*
L-H	4- 0 inches	Black semidecomposed organic matter; F layer felty; H layer fibrous; 3-6 inches thick; pH 4.0.
Ae	0- 3 inches	Pinkish-gray (7.5YR 6/2) sandy loam; structureless; friable; 2-4 inches thick; pH 4.3.
Bfg_1	3-12 inches	Brown (7.5YR 5/4) sandy loam; weak crumb structure; friable; mottled; 6-10 inches thick; pH 4.6.
Bfg_2	12-20 inches	Strong-brown (7.5YR 5/6) sandy loam; medium crumb to weak, medium, subangular blocky structure; firm; streaked with light-gray mottling; 5-10 inches thick; pH 5.2.
Cg	20 + inches	Reddish-brown (2.5YR 4/4) sandy loam; compact; sticky when wet; gritty; mottled; small fragments of sandstone and trap rock; pH 5.2.

The surface or cultivated layer is very dark brown (10YR 2/2) sandy loam. It is high in organic matter and has a strong, medium crumb structure. The subsoil varies from yellowish brown to reddish brown. Faint mottling usually occurs in the upper B horizon, but is very noticeable in the lower B. Gray streaks set in a brown matrix are characteristic of this horizon in the Annapolis soils. The parent material ranges from reddish brown to dark red and appears to be moderately fine textured. It is sticky when moist, but has a pronounced gritty feel. It is compact in place and nearly impervious.

A fairly large proportion of the area occupied by these soils is cultivated. Most of it is used for hay and grain production, but some areas are used for roots, vegetables and small fruits. The range of crops that can be grown on these soils depends largely upon drainage and management practices. Tile drains or open ditches are essential for the production of vegetables, small fruits and root crops. Crops of hay and grain would be improved by adequate drainage facilities.

Liverpool Series (12,013 acres)

The soils of the Liverpool series are confined to several small areas between Mavilette and Maxwellton in southwest Digby County. They occur in association with the Mersey soils on gently undulating to gently rolling topography. Drainage in the Liverpool soils is restricted by topography and shallowness to bedrock. The parent material is firm, and the internal drainage is slow in some places. The soils are very stony and, except for small areas, are not suited to farming. They support a good growth of red spruce, red maple, wire birch and fir. The profile of a sandy loam is described as follows:

Horizon	*Depth*	*Description*
L-H	3- 0 inches	Brownish-black semidecomposed organic matter; F layer fibrous; H layer greasy mor; 2-5 inches thick; pH 3.6.
Ae	0- 2 inches	Gray (5Y 6/1) sandy loam; structureless; porous; 2-4 inches thick; pH 3.8.
Bfhg	2-10 inches	Dark grayish brown (10YR 4/2) sandy loam; medium crumb structure; friable; light mottling; 6-10 inches thick; pH 4.8.
Bfg	10-18 inches	Light olive brown (2.5Y 5/4) sandy loam; structureless; firm; strong-brown mottles; 6-10 inches thick; pH 5.0.
Cg	18 + inches	Olive (5Y 5/3) sandy loam; firm; mottled; some stone fragments; pH 5.2.

The cultivated surface layer is dark grayish brown and ranges from sandy loam to loam; however, sandy loam is the main texture for the area. Underlying the surface soil is a brown to yellowish-brown friable upper B horizon which grades very gradually into a firm, mottled subsoil. Below this is a firm parent material, usually mottled. In some areas the lower B horizon and parent material are absent where the soils are very shallow over bedrock.

Utilization

The Liverpool soils in Digby County are fairly good forest soils and only a few acres have been cleared for farming or rough pasture. Stoniness and poor drainage are the major factors limiting their agricultural use.

Danesville Series (58,477 acres)

Danesville soils occur widely in the County and account for approximately 9.3 per cent of the total area, or the third-highest acreage mapped. They occupy imperfectly drained sites associated with the well-drained Halifax soils. Topography ranges from rolling in coastal areas to gently undulating a few miles inland. Surface drainage is usually adequate, but internal drainage is restricted by bedrock or firmness of the parent material. Vegetation consists of red spruce, fir, yellow birch, red maple, tamarack and alder. A profile of a sandy loam is described as follows:

Horizon	*Depth*	*Description*
L-H	3- 0 inches	Brownish-black semidecomposed organic matter; F layer fibrous; H layer black granular mor; 2-6 inches thick; pH 3.6.
Ae	0- 3 inches	Light brownish gray (10YR 6/2) sandy loam; structureless; friable; 2-4 inches thick; pH 3.8.
Bfg_1	3- 8 inches	Light olive brown (2.5Y 5/4) sandy loam; medium crumb structure; friable; distinct yellowish-brown mottles; 4-8 inches thick; pH 4.8.
Bfg_2	8-18 inches	Light olive brown (2.5Y 5/4) sandy loam; structureless; firm; yellowish-brown mottles; 5-10 inches thick; pH 5.0.
Cg	18 + inches	Olive (5Y 5/3) sandy loam; firm; mottled; numerous fragments of quartzite and some slate; pH 5.2.

Where cultivated the surface layer is a grayish-brown sandy loam, with well-developed crumb or weak granular structure. The subsoil ranges from reddish brown through yellowish brown to olive. The till is a yellowish brown to olive sandy loam and is usually coarse to moderately coarse-textured, firm and mottled.

Utilization

Nearly all the Danesville soils are too stony for cultivation and are in forest or rough pasture. The small acreage farmed is finer-textured and less stony than most of the series. This gently rolling land, suitable for use of heavy farm machinery, occurs around Weymouth, including Bellevue Cove, Ashmore, Gilbert Cove, Weymouth North and Plympton Station. Hay and grain are the principal crops grown, but roots, vegetables and small fruits would grow well with good soil-management practices. The soils are rather high in organic matter, have good soil structure but are very sour and require lime. Fertility is generally low and commercial fertilizers must be applied for good crop production in those areas where agricultural development is not limited by stoniness and drainage. Adequate drainage should be provided before grain, vegetable and small fruit crops are planted.

Bayswater Series (57,184 acres)

Soils of the Bayswater series are associated with the well-drained Gibraltar soils. Bayswater soils occupy 8.3 percent of the County area. They are imperfectly drained and generally occur on gently undulating to gently sloping topography. They are, in all areas, excessively stony with large granite boulders strewn liberally over the surface. These soils support a good growth of hemlock, red maple, red spruce and wire birch or, with poorer drainage, black spruce, tamarack and red maple. A sandy loam profile is described as follows:

Horizon	*Depth*	*Description*
L-H	4- 0 inches	Black semidecomposed organic matter; F layer felty; H layer thick greasy mor; 3-8 inches thick; pH 3.5.
Ae	0- 3 inches	Light-gray (5Y 7/2) sandy loam; structureless; friable; 2-6 inches thick; pH 4.1.
Bfhg	3- 8 inches	Yellowish-brown (10YR 5/4) sandy loam; medium crumb structure; friable; some pale-brown mottling; 2-8 inches thick; pH 4.5.
Bfg	8-16 inches	Yellowish-brown (10YR 5/6) sandy loam; firm; structureless; distinct strong-brown mottles; 4-12 inches thick; pH 4.8.
BCg	16-22 inches	Pale-brown (10YR 6/3) sandy loam; structureless; firm; brown mottles; 4-10 inches thick; pH 5.0.
Cg	22 + inches	Light-gray (10YR 7/2) coarse sandy loam; firm; mottled; very stony; pH 5.0.

Bayswater soils are practically uniform throughout the area in both texture and color. They resemble the Gibraltar soils in many respects and differ chiefly in the degree of mottling, a function of drainage.

Utilization

Bayswater soils are too stony for agriculture and should be left in forest. The few small areas cleared at present are used for rough pasture.

Roxville Series (8,269 acres)

The Roxville soils occupy gently to moderately undulating topography in association with the well-drained Rossway and the poorly drained Tiddville series. This series has moderately rapid surface drainage, but water movement through the subsoil is restricted by topography or shallowness to bedrock. Forest vegetation consists of red maple, red spruce, fir, birch, wild apple and alder. A sandy loam profile is described as follows:

Horizon	*Depth*	*Description*
L-H	3- 0 inches	Black semidecomposed organic matter; F layer fibrous; H layer thick granular mor; 3-7 inches thick; pH 4.0.
Ae	0- 2 inches	Pinkish-gray (7.5YR 6/2) sandy loam; weak platy structure; 0-4 inches thick; pH 4.2.
Bfhg	2-10 inches	Dark-brown (7.5YR 4/4) sandy loam; structureless; firm; mottled; 2-12 inches thick; pH 4.8.
Bfg	10-18 inches	Yellowish-brown (10YR 5/6) sandy loam; structureless; firm; distinct dark-brown mottles; 4-12 inches thick; pH 5.4.
C	18 + inches	Light olive brown (2.5Y 5/4) sandy loam; moderately firm; very stony; pH 5.6.

The cultivated surface soil is dark brown to dark grayish brown, friable sandy loam and has a strong crumb structure. The organic matter content

of this layer is usually high. The subsoil is firm and mottled, grading into a firm sandy loam to cobbly sandy loam parent material. In some areas the parent material contains a moderate amount of Triassic sandstone material which has influenced the color and consistence of the solum.

Utilization

The Roxville soils have fewer rock outcrops than the Rossway series and are generally not as shallow or stony. However, stone is so plentiful that agriculture will probably be limited to the small, stony farms now cleared. The soils are capable of growing good crops of roots, vegetables and potatoes. Some general farming is practiced in scattered areas along Digby Neck.

Pitman Series (6,221 acres)

This series occurs in the southwestern corner of the County on gently undulating to depressional topography associated with the Mersey, Liverpool, Yarmouth and Deerfield series. Drainage is moderately slow to slow externally and slow internally, due to topography or to compaction of the parent material, or both. The soils cover a small part of the County and are not important agriculturally. Where forested they support a fair growth of red spruce, black spruce, red maple, tamarack and alder. A sandy loam profile is described as follows:

Horizon	*Depth*	*Description*
L-H	5- 0 inches	Black semidecomposed organic material; F layer felty; H layer greasy mor; 4-10 inches thick; pH 3.5.
Aeg	0- 3 inches	Olive-gray (5Y 5/2) sandy loam; weak, fine, crumb structure; grayish-brown mottles; 2-6 inches thick; pH 3.8.
Bfhg	3- 6 inches	Dark-brown (10YR 4/3) sandy loam; structureless; firm; strong-brown mottles; 2-6 inches thick; pH 4.5.
Bfg	6-16 inches	Light olive brown (2.5Y 5/4) sandy loam; structureless; firm; distinct yellowish-brown mottles; 5-12 inches thick; pH 4.8.
Cg	16 + inches	Olive-gray (5Y 5/2) sandy loam; compact; mottled; numerous small fragments of schist; pH 5.0.

The surface layer in cultivated areas is mucky to a depth of 6 to 10 inches and overlies a strongly mottled, bleached horizon. This grades sharply into a dark-brown or grayish-brown, strongly mottled B horizon. The boundary between the B horizon and the parent material is sharply defined. The soils have a high water table throughout much of the year.

Utilization

The soils of the Pitman series, in their present state, are not suited to agriculture. Small areas have been cleared and are used for pasture. Some of the better-drained areas support good forest growth. With large areas of well-drained soils available for agriculture it is not economically feasible to clear and drain areas of Pitman soils at this time. Changing conditions may make clearing and draining of some areas, for specialized crops, a sound economic venture.

Seely Series (2,451 acres)

These soils occur on level to gently undulating topography in the area west of Digby town. They have developed from the same parent material as the Kentville and Annapolis series and are associated with them. Their

poor drainage is due, in part, to topography and also to the compact, impervious parent material. A sandy loam profile is described as follows:

Horizon	*Depth*	*Description*
L-H	5- 0 inches	Black, partly decomposed organic matter; H layer greasy mor; 3-8 inches thick; pH 3.5.
Aeg	0- 4 inches	Pinkish-gray (7.5YR 7/2) sandy loam; structureless; grayish-brown mottles; 2-6 inches thick; pH 4.2.
Bfhg	4- 8 inches	Dark-brown (10YR 4/3) sandy loam; medium crumb structure; many prominent grayish-brown mottles; moderately friable; 3-9 inches thick; pH 4.6.
Bg	8-15 inches	Brown (10YR 5/3) sandy loam; firm; strongly mottled; 6-10 inches thick; pH 4.8.
C	15 + inches	Reddish-brown (5YR 4/4) sandy loam; compact; slightly plastic when wet; fragments of sandstone and trap rock; pH 5.2.

Mottling is most pronounced in the upper B horizon, and a very abrupt color change occurs between the lower B horizon and the compact parent material.

Utilization

At present, use of these soils is generally confined to rough pasture. However, occasionally they occupy wet spots in cultivated fields. Drainage is the chief factor limiting their agricultural development. An artificial drainage system, with either open ditches or tile drains, would have to be installed for satisfactory production of most crops. Stoniness is not a serious limiting factor on most Seely soils, but some stony areas do occur and these should be avoided in any program of agricultural development.

Aspotogan Series (29,685 acres)

Soils of the Aspotogan series occupy depressional to gently undulating topography in association with the well-drained Gibraltar and Halifax series and the imperfectly drained Bayswater and Danesville Series. Drainage is slow externally and very slow internally due primarily to topography and shallowness to bedrock. The soils have a fairly deep organic surface layer and in some places resemble peat bogs. Vegetation in wooded areas consists of red spruce, red maple, tamarack, black spruce and alder. Very poorly drained areas are covered with sphagnum moss, tamarack, alder and black spruce. A sandy loam profile is described as follows:

Horizon	*Depth*	*Description*
L-H	8- 0 inches	Black semidecomposed organic material overlain by 3-6 inches of sphagnum moss or raw peat; 6-11 inches thick; pH 3.6.
Aeg	0- 8 inches	Light-gray (10YR 7/2) sandy loam; structureless; moderately firm; distinct grayish-brown mottles; 6-10 inches thick; pH 4.2.
Bhg_1	8-14 inches	Very dark grayish brown (10YR 3/2) sandy loam; granular structure; moderately firm; many distinct yellowish-brown mottles; 5-9 inches thick; pH4.8.
Bhg_2	14-20 inches	Dark-brown (7.5YR 3/2) sandy loam; firm; dark yellowish brown streaks and mottles; very stony; 4-10 inches thick; pH 5.0.
Cg	20 + inches	Yellowish-brown (10YR 5/4) sandy loam; firm; strongly mottled; very stony; pH 5.2.

The solum is seldom more than 15 to 18 inches thick, particularly in areas underlain by granite. Organic matter on the surface is very acid and is poorly decomposed or peaty. In the B horizon, these soils are usually compact but are rarely cemented.

Utilization

Aspotogan soils are not used for farming and where drainage is very poor they are not even suitable for forestry. Poor drainage and extreme stoniness are the main factors limiting their use.

TIDDVILLE SERIES (2,118 acres)

The soils of this series occur as scattered small depressional areas on Briar Island, Long Island and Digby Neck. They are found on poorly drained sites associated with the Rossway and Roxville series. Because of their location, drainage is slow, and mucky or peaty organic matter has accumulated on the surface. Vegetation consists chiefly of black spruce, tamarack, alder and sphagnum moss. In the better-drained areas, red spruce and red maple may be found. A profile of a sandy loam is described as follows:

Horizon	*Depth*	*Description*
L-H	8- 0 inches	Black, fairly well decomposed organic matter; F layer thin; H layer thick, greasy mor; 4-12 inches thick; pH 3.6.
Aeg	0- 3 inches	Grayish-brown (10YR 5/2) sandy loam; structureless; friable; mottled; 2-5 inches thick; pH 4.4.
Bfhg	3- 9 inches	Dark-brown (10YR 4/3) sandy loam; firm; yellowish-brown streaks and mottles; 4-8 inches thick; pH 4.8.
Bfg	9-16 inches	Yellowish-brown (10YR 5/4) sandy loam; firm; many distinct dark yellowish brown mottles; 4-10 inches thick; pH 5.0.
Cg	16 + inches	Light olive brown (2.5Y 5/4) sandy loam; firm; mottled; numerous cobbles and angular fragments of trap rock; pH 5.6.

There is some variation in profile development in Tiddville soils. In some areas poor drainage results from shallowness over bedrock. Here it is apt to be seasonal and less mottling is noted in the profile. Very poorly drained sites often grade into shallow bogs of sphagnum peat.

Utilization

Tiddville soils are not suitable for cultivation. On Long and Briar islands small areas are used for sheep pasture.

Soils Developed from Coarse-Textured Stratified Parent Materials

Parent materials of glacial or postglacial origin have been deposited by water in various parts of the County. Some of these are in the form of kames, eskers and outwash plain laid down by glacial melt waters. Others have been deposited as terraces by postglacial streams. Still others are of marine origin.

Only two catenas were identified on the coarse-textured materials. The Medway catena includes soils developed on stratified glaciofluvial deposits of metamorphic or igneous materials. There are small scattered deposits of this kind in the County and, though they vary considerably in composition, the soils developed on them have the same type of profile and similar land-use characteristics. In the Medway catena only one member was mapped, the well-drained Medway series.

55126-7—3½

Along the shore of St. Mary's Bay, from the northern border of Yarmouth County to Bear River, are fairly extensive areas of wave-washed gravels or raised beach terraces. In most areas these are shallow deposits over compact marine sediments. The coastal area is believed to have risen above sea level after the retreat of the continental ice sheet. Gradual upwarping of the area would account for the relatively shallow wave-washed gravels deposited on the surface. The underlying sediments contain numerous shells of marine origin and have clearly been formed as marine deposits. These soils constitute the Digby catena, of which three series were classified on the basis of drainage characteristics. They are the well-drained Digby series, the imperfectly drained Comeau series and the poorly drained Meteghan series.

Medway Series (2,202 acres)

The soils of the Medway series occupy isolated small areas throughout the western and northern part of the County. They are usually found on mounded topography but may occur where it is level or nearly so. The soils have developed from low ridges or hills of stratified gravels and in places form a very intricate pattern with associated soils developed on till materials. Where forested they support a good growth of pine, spruce, birch and some maple. A profile of a sandy loam is described as follows:

Horizon	*Depth*	*Description*
L-H	2- 0 inches	Brownish-black semidecomposed organic matter; F layer fibrous; H layer fluffy mor; 1-2 inches thick; pH 3.6.
Ae	0- 2 inches	Light-gray (10YR 7/2) sandy loam; structureless; friable; 1-2 inches thick; pH 3.8.
Bfh	2-15 inches	Yellowish-brown (10YR 5/8) gravelly sandy loam; fine crumb to single-grain structure; numerous stones and cobbles; 7-12 inches thick; pH 5.2.
C	15 + inches	Stratified gravel; loose and unconsolidated; chiefly quartzite with some slate and granite.

Where cultivated the surface layer is dark-brown to grayish-brown gravelly sandy loam. It is moderately friable but usually contains some stones and cobbles. The solum ranges in depth from 12 to 25 inches and grades into coarse sands or gravels of variable composition and origin.

Utilization

A fairly large proportion of the Medway soils in Digby County are used agriculturally. They tend to be droughty, are usually stony and occupy mounded to hilly topography. Where better soils are available, areas not cleared should be left in forest. Medway soils now under cultivation are suitable for potatoes, some vegetable crops and small fruits. The organic matter content of these soils should be kept at a high level to maintain water-holding capacity. Lime and fertilizer are necessary for good crops.

Digby Series (9,954 acres)

The soils of the Digby series occupy undulating to rolling topography along the shores of St. Mary's Bay from Yarmouth County to Digby town. Surface drainage is rapid in these soils and water-holding capacity is low. A relatively high organic matter level in the cultivated layer partly offsets this detrimental factor, but the soils still tend to be droughty. A large proportion of the soils have been cleared, but a few areas are still forested with

conifers, largely spruce. A profile of a gravelly sandy loam is described as follows:

Horizon	*Depth*	*Description*
L-H	3- 0 inches	Dark-brown semidecomposed organic matter; F layer matted, fibrous; H layer thin, fluffy mor; 2-5 inches thick; pH 3.8.
Ae	0- 2 inches	Light brownish gray (10YR 6/2) sandy loam; structureless; friable; 0-4 inches thick; pH 4.2.
Bf_1	2- 8 inches	Strong-brown (7.5YR 5/6) gravelly sandy loam; weak crumb structure; friable; 7-10 inches thick; pH 5.2.
Bf_2	8-18 inches	Yellowish-brown (10YR 5/4) gravelly sandy loam; firm; a considerable amount of rounded gravel; 6-12 inches thick; pH 5.4.
C	18 + inches	Coarse stratified gravel; wave-washed slate, quartzite and trap rock.

The cultivated layer is dark grayish brown and ranges in texture from gravelly sandy loam to loamy sand. It overlies a B horizon of yellowish-brown to strong-brown gravelly sandy loam to sandy loam. In some places the B horizon is strongly cemented, and mottling often occurs in the lower B. A compact, relatively impervious bed of marine sediments lies at variable depth below the coarse gravelly parent material.

Utilization

The soils of the Digby series are important agriculturally in the County and, although individual farms are small, they are capable of producing a wide variety of vegetables, root crops, small fruits, grain and hay. When the soils are well managed they are productive in spite of their low water-holding capacity. The extreme coarseness of the parent materials (Figure 10) also prevents water from rising from the substratum through capillary action. Thus for valuable cash crops such as strawberries, irrigation is suggested for soils of this type.

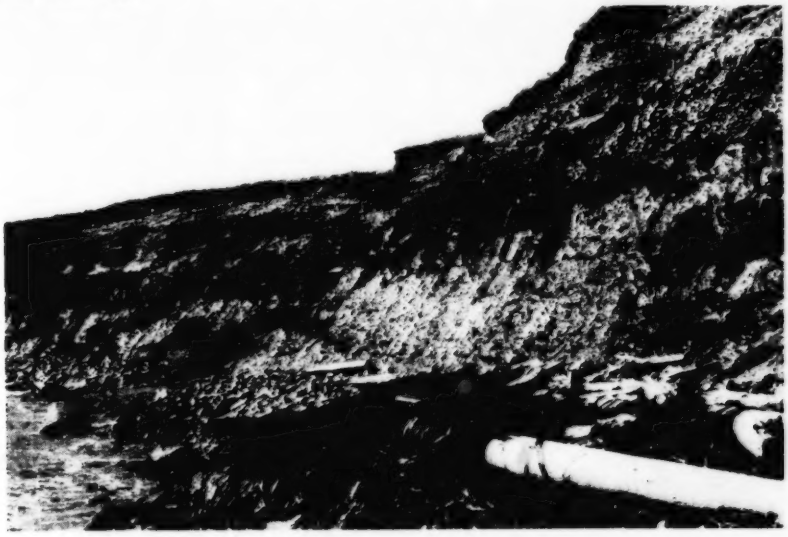

FIGURE 10.—Soils of the Digby catena have developed on wave-washed gravel, underlain by compact marine sediments.

COMEAU SERIES (2,323 acres)

The soils of this series are on level to gently undulating topography associated with the well-drained Digby and the poorly drained Meteghan series. Through surface drainage may be moderately rapid, subsoil drainage is slow, usually due to the presence, at a depth of several feet, of a compact, nearly impervious marine deposit.

The soils are nearly all cleared and used for agriculture. Where wooded they support a good growth of fir, tamarack and red or black spruce. A profile of a gravelly sandy loam taken from a cultivated field is described as follows:

Horizon	*Depth*	
Aa	0- 7 inches	Dark grayish brown (10YR 4/2) gravelly sandy loam; well-developed granular structure; friable; porous; pH 5.0.
Bfg	7-12 inches	Brown (10YR 5/3) gravelly sandy loam; firm; distinct dark-brown mottles; numerous rounded stone fragments; 4-8 inches thick; pH 4.8.
Bfgcj	12-18 inches	Grayish-brown (10YR 5/2) gravelly sandy loam; weakly cemented; brown mottles; 4-10 inches thick; pH 5.2.
C	18 + inches	Coarse wave-washed gravel; chiefly slate, quartzite and some trap rock materials.

In undisturbed locations the L-H horizon is black semidecomposed organic matter from 2 to 5 inches thick above an Ae horizon of light-gray, friable sandy loam from 2 to 4 inches thick. In some areas the B horizon is cemented and is underlain by a layer of stratified gravel. Beneath this gravel is a marine deposit of dark-brown, compact, sandy loam to sandy clay loam. Water moves laterally over the surface of this compact substratum and occasionally reaches the soil surface as seepage spots on the slopes and in depressions.

Utilization

Though gravelly, these soils have few large rocks or boulders on the surface and they can be worked with ease. The more poorly drained areas are used as pasture or hay land. The better-drained areas are used for grain, hay, vegetables and root crops.

METEGHAN SERIES (1,389 acres)

These soils occur on level to depressional sites associated with the Digby and Comeau series. Surface and subsoil drainage is slow. In most cases the poor drainage is caused by an underlying stratum of compact marine sediments that stops downward movement of drainage water. Where the land is forested the principal tree growth is tamarack, alder, black spruce and fir. A few areas are too poorly drained to support forest growth. A profile of a gravelly sandy loam under forest vegetation is described as follows:

Horizon	*Depth*	*Description*
L-H	8- 0 inches	Black semidecomposed organic matter; F layer matted, fibrous; H layer thick, greasy mor; 4-10 inches thick; pH 3.6.
Aeg	0- 4 inches	Gray (10YR 5/1) sandy loam; fine crumb structure; friable; distinct brown mottles; 3-7 inches thick; pH 4.0.
Bfhg	4-10 inches	Grayish-brown (10YR 5/2) sandy loam; structureless; firm; frequent distinct brown mottles; 4-8 inches thick; pH 4.8.
Bfg	10-16 inches	Light brownish gray (10YR 6/2) gravelly sandy loam; very firm; mottled; 4-10 inches thick; pH 5.0.
C	16 + inches	Coarse, cemented wave-washed gravel; chiefly quartzite and slate materials.

The soils are usually found in depressional areas and often grade into shallow peat deposits. Mottling occurs throughout the profile and horizon boundaries are indistinct. Infiltration of organic matter into the Aeg horizon makes it dull gray.

Utilization

Much of the land in this series has been cleared. It is not suited to production of most crops in its present state, but some of the better-drained areas, used for pasture or hay, could be greatly improved by use of tile drainage.

Soils Developed from Organic Materials

Organic soils cover a total area of 16,282 acres, or 2.6 percent, of the County. They occupy old lake beds or flat areas bordering stagnant streams. The deposits were divided into two classes based on the type of vegetation from which they were formed: sedge peat, a fairly well decomposed mineralized deposit; and sphagnum or raw peat, composed chiefly of sphagnum moss.

Sedge Peat (4,960 acres)

Soils of this type occur along stillwaters and are formed chiefly from sedges and swamp grasses associated with very wet or flooded locations. The surface 12 inches or more is poorly decomposed organic material, black or dark brown in color and made up of sedges, grass roots and some sphagnum moss.

Underlying the surface layer is 1 to 6 feet of fairly well decomposed organic sediments. These deposits are saturated throughout the year and are often very soft and boggy.

Utilization

Most of these areas are too wet throughout the year to be of much value for agriculture. Some areas are used as pasture for livestock and others serve as nesting places for wild fowl.

Sphagnum Peat (11,322 acres)

Sphagnum peat deposits occupy depressional areas and old lake beds throughout the County and vary in thickness from 1 to 10 feet or more. The sediments are made up of semidecomposed sphagnum moss and sedges, with a fairly deep surface layer of raw sphagnum moss. In some of the more shallow areas, stunted black spruce and tamarack grow on the deposits or along the edges. Usually there is no forest vegetation.

Utilization

In their present condition the peat bogs have little value for either agriculture or forestry. Some of the larger deposits are potential sources of commercial peat moss. Where drainage costs are not prohibitive, a few areas could be utilized for production of crops by use of special equipment and techniques.

Miscellaneous Soils

These soils occupy about 4,979 acres, or 0.8 per cent, of the County area. They include swamp, salt marsh and coastal beach and have little or no agricultural value in their present condition. However, there are several salt marsh areas of potential agricultural value if they were properly dyked and drained.

Swamp (3,123 acres)

These soils occur on depressional topography with very poor drainage. The water table remains at or near the surface for most of the year and many areas remain partly flooded for lengthy periods after heavy rains.

The surface soil is a black or dark-brown, partly decomposed organic layer 5 to 12 inches thick. This overlies a gray or grayish-black mineral soil that grades into a strongly mottled and usually compact substratum. The organic surface layer may range from well-decomposed and mineralized muck to poorly decomposed peat. Some swamp areas resemble small peat bogs in appearance and consist of shallow peat over mineral soil. Usually some forest growth is present, consisting of tamarack, black spruce, and sometimes fir, red maple and red spruce.

Salt Marsh (1,446 acres)

Salt marshes occur along the shores of St. Mary's Bay. The most important ones are at Cape St. Mary and near Rossway. The marshes have developed from repeated flooding of coastal areas by sea water. Deposition of sediments at high tide has built up deep, medium- to fine-textured deposits along tidal streams and in protected inlets. These sediments are gray to olive silt loams. The surface is covered with salt-tolerant vegetation, chiefly marsh grass, sea blite and spurrey.

Utilization

Undyked salt marshes are of little value for agriculture. However, dykes are under construction to protect the salt marsh near Rossway from salt-water flooding. When this work is completed and drainage is provided, about 600 acres of fertile and potentially productive marshland will be available to farmers of the area.

Coastal Beach (410 acres)

Much of the area mapped as coastal beach is shifting sand and gravel bars protecting shallow bays and inlets along the shores of St. Mary's Bay. Since the bars are continually building up and wearing away they do not develop soil profiles. A few of the sand and gravel bars make fine beaches and are important tourist attractions.

AGRICULTURE AND LAND USE

Present Land Use

A very large proportion of Digby County is at present in forest or bush land. Only about 3 percent has been classed as improved land and only 17 percent is owned by farmers or included in farm holdings (Table 4). The remainder is, for the most part, owned by lumber companies or is crown land. A total of 1,106 occupied farms are listed in the 1956 census with an average area of 96 acres per farm. The average improved area per farm is about 15 acres.

TABLE 4.—ACREAGES OF OCCUPIED LAND IN DIGBY COUNTY, 1956

Total land area	620,800 acres
Area in farms	106,350 acres
Number of farms	1,106
Improved land	16,277 acres
Field crops[1]	6,657 acres
Pasture	5,898 acres
Other	3,722 acres
Unimproved land	90,073 acres
Woodland	62,811 acres
Other	27,262 acres

[1]Includes field, vegetable, fruit and nursery crop land.

Of the total area in field crops in 1956 about 77 percent was in hay (Table 5). Grains occupied the largest acreage not in hay with 6 percent, and potatoes next with a little over 5 percent.

About 93 acres of vegetables were grown in the County in 1956. Cabbage, carrots, beans, peas, sweet corn, tomatoes, beets, lettuce and cauliflower were all grown successfully. Though most of the vegetables were grown in small gardens of an acre or less, several larger plantings were made near Digby.

TABLE 5.—ACREAGES IN FIELD CROPS IN DIGBY COUNTY, 1956

All field crops	6,657
Hay	5,125
Oats	402
Potatoes	345
Turnips, swedes and mangels	151
Corn for fodder	72
Other field crops	562

Dairying and mixed farming are the most important agricultural enterprises in the area. About 11 million pounds of fluid milk are produced annually; only 1.7 million pounds of this is sold as fluid milk, and the rest is processed for creamery butter or is consumed on the farm. About 465,000 pounds of cream and 50,000 pounds of butter were sold off farms in 1956.

Table 6 shows the types and numbers of livestock in the County in 1956. The sale of animal and poultry products of all kinds adds considerably to the farm income.

Though tractors have replaced horses on most of the farms, oxen (Figure 11) are still used by some farmers.

The farms in Digby County are nearly all free of mortgages. All but 0.9 percent were owner-operated in 1956.

TABLE 6.—TYPES AND NUMBERS OF LIVESTOCK IN DIGBY COUNTY, 1956

Horses	501
Cattle (total)	5,473
Dairy cattle (2 yrs. and over)	2,459
Steers (1 yr. and over)	827
Swine	1,062
Sheep	1,498
Hens and chickens	26,183
Turkeys	3,049
Ducks	104
Geese	87

FIGURE 11.—The ox is still a beast of burden on some Digby County farms.

Management of Soils

The following is helpful information on practices in soil management.

Drainage

Poorly drained soils must be drained artificially before satisfactory yields can be obtained. Low-value crops, such as hay or grain, may not justify expensive or complex drainage systems, whereas more valuable crops will. In this province, artificial drainage serves its most useful and economic purpose in small wet areas of otherwise well drained fields and in dykeland areas where the natural fertility of the soil offsets the cost of reclamation. Tile drainage normally would be the most satisfactory but where low-value crops are grown open ditches are adequate.

Irrigation

For some vegetable and small fruit crops, particularly strawberries, irrigation has proven very successful. The chief advantages of an irrigating

system for these crops is in supplying water during dry periods and for the prevention of frost damage in the spring and fall. However, the cost of installation makes its use prohibitive for low-value crops.

On light sandy soils, low in humus, an irrigation system is more important than for finer-textured soils, or soils well supplied with organic matter. Crops on sandy soils that are low in organic matter suffer from moisture deficiencies even in short periods of dry weather.

Fertility

All upland soils in the County have low natural fertility. They are also acid, both in the surface soil and in the subsoil. Proper management of these soils therefore will involve reducing the natural acidity, conserving humus and raising the level of fertility by using legumes and commercial fertilizers.

The rate of fertilization and liming should be based on soil tests and the needs of the crops to be grown. Instructions for taking soil samples may be obtained from the county agricultural representative or the Nova Scotia Department of Agriculture and Marketing, Truro.

Use of Lime

Few crops grow well on an acid soil. This is not due to the acidity alone since soil acidity in itself is not harmful to most plants. It is the secondary effects of soil acidity that are so unfavorable to plant growth. First, an acid soil usually contains a level of acid-soluble aluminum that is toxic and detrimental to plant growth. Second, beneficial soil bacteria, such as those that convert organic nitrogen to nitrate, and those that fix atmospheric nitrogen, do not thrive in an acid medium. This high soil acidity usually contributes to a low level of available calcium and magnesium in the soil. Most crops require fairly high levels of these elements for best growth. Soil bacteria also require adequate levels of calcium.

Except for a few crops, notably potatoes, strawberries and blueberries, the soil pH should be raised to between 6.0 and 7.0 for good growth. In this pH range there is optimum bacterial activity, soluble aluminum is reduced to a low level and there is little danger of lowering soluble manganese or iron to the deficiency level. Boron, however, may become deficient at this pH.

Lime should be applied to the soil at 2 to 3 tons per acre on plowed land. Liming should be repeated in four or five years if a soil test indicates the need.

Humus

Organic matter is an essential constituent of agricultural soils and maintaining it is one of the greatest problems in soil management.

Humus is destroyed by continued clean cultivation and such practices as summer fallowing. It is conserved by maintaining the soil under grass cover. Healthy crops of grasses and legumes, together with the wise use of barnyard manure, maintain and usually raise the level of soil organic matter. In livestock farming it should not be necessary to plow down green-manure crops. This costly practice supplies a good deal of readily decomposable organic matter, which breaks down in a short period of time, releasing its plant nutrients to the soil. But it has little long-lasting effect on the level of soil organic matter. The plant nutrients taken up by the green manure crop and later released could have been applied directly and without delay as commercial fertilizer.

The maintenance of a reasonably high level of active organic matter in the soil goes a long way towards ensuring adequate moisture-holding

capacity and resistance to erosion and leaching. It provides good structure and, other conditions being favorable, a beneficial microbiological population in the soil.

Commercial Fertilizers

Adequate drainage, use of lime and maintenance of organic matter levels will not ensure satisfactory crop yields. These practices, though important, must be supplemented by use of chemical fertilizers. To maintain the fertility of a soil at a reasonably high level, the plant nutrients taken by the crops or lost through leaching must be replaced in some way. A portion is returned through plant and animal residues. Nitrogen may be replaced by nitrogen-fixing soil bacteria. However, most soils in the area will not regenerate by natural means all the nitrogen, phosphorus, calcium and potash needed for good crop growth, and consequently these have to be supplied in the form of commercial fertilizer. Crops of high value, such as most vegetables, flowers, small fruits and potatoes, may return the cost of heavy rates of application. Grain and hay usually do not justify as great an expenditure for fertilizer.

Where symptoms of boron or magnesium deficiency have occurred in crops, fertilizers containing these elements may be used. It should be remembered, however, that a number of crops have a very narrow range of tolerance to boron and this element should not be applied haphazardly to all crops.

Foliar sprays can be used for crops showing deficiency symptoms; epsom salts is used for magnesium deficiency and borax for boron deficiency. Rates of application depend on the crop.

Erosion

The erosion hazard in Nova Scotia is not as marked as in many other areas of North America; this is primarily because so little land in Nova Scotia is under the plow. As long as fields are in sod there is little danger from erosion. However, continuous intensive production of root crops, vegetables or potatoes on many of our soils may result in very severe gully, rill and sheet erosion.

To ensure that water erosion losses in Digby County are kept to a minimum the following recommendations should be observed:

1. Production of vegetables and root crops should be confined to soils with A and B slopes (0-8 percent). However, on land sloping 4-8 percent, moderate to severe erosion may occur under clean cultivation. Plowing and cultivating with the contour and high organic matter levels will reduce this danger.

2. Soils with C slopes (8-16 percent) will show moderate to severe erosion under clean cultivation and are best suited to pasture or hay. If cultivated, these soils should be strip-cropped on the contour and protected with grassed waterways.

3. Soils with D slopes (16-30 percent) are not suited for cultivation but may make good pasture if reseeded and fertilized.

4. Soils with E slopes (above 30 percent) should be left in forest, or reforested if cleared.

Long smooth slopes are more subject to erosion than short irregular slopes in the same topographic class. Clay soils erode more readily than sandy soils and, other factors being equal, soils with a high level of organic matter and good structure resist erosion more readily than others.

Land-Use Capability

A fairly large proportion of the soils in Digby County are too stony for cultivation and should be left in forest. Others are too poorly drained or are

too shallow for agricultural development. Any one or a combination of texture, structure, susceptibility to erosion, natural fertility, ease of cultivation, water-holding capacity, and stoniness may limit the use of land.

The soils of the area were grouped according to their use characteristics (Figure 12, Tables 7-12). There are seven classes, on the basis of the severity of limitations that physical factors impose on the use of land for crops. These classes have subclasses within them.

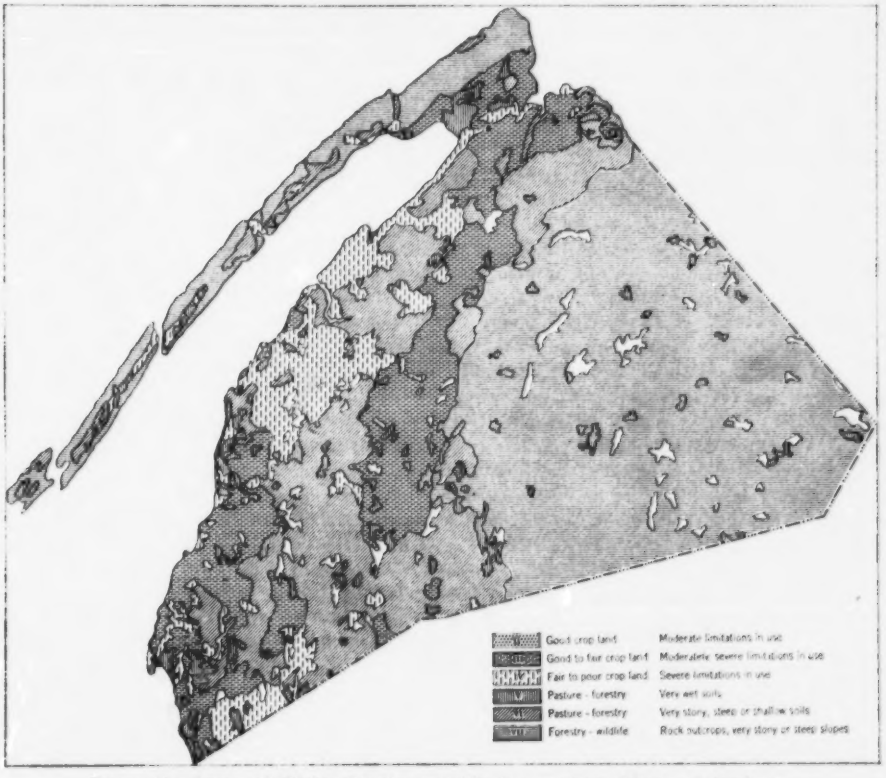
Good crop land
Moderate limitations in use
Good to fair crop land
Moderately severe limitations in use
Fair to poor crop land
Severe limitations in use
Pasture - forestry
Very wet soils
Pasture - forestry
Very stony, steep or shallow soils
Forestry - wildlife
Rock outcrops, very stony or steep slopes

FIGURE 12.—Areas of Digby County suitable for various classes of land use.

Classes I to IV are suitable for cultivated crops, pasture or wood land, but the possible crop uses become fewer and the risks greater from Class I to Class IV. Classes V to VII are suitable for pasture or forest.

Subclasses define the limitations on agricultural use under the headings of stoniness, wetness, shallowness and slope or erosion hazards. The soils that belong in each subclass and class are listed with their topographic and stoniness symbols as these appear on the soil map. The symbols for topography are:

A: Level to gently undulating, 0-3 percent slope
B: Gently undulating to gently rolling, 3-8 percent slope
C: Strongly undulating to rolling, 8-16 percent slope
D: Strongly rolling to hilly, 16-30 percent slope
E: Hilly to mountainous, over 30 percent slope

The symbols for stoniness are:

0: Stone-free
1: Slightly stony; no hindrance to cultivation

2: Moderately stony; enough stone to interfere with cultivation unless removed
3: Very stony; enough stone to be a serious handicap to cultivation
4: Excessively stony; too stony for cultivation

Class I

Land in Class I is easy to work and can be cultivated safely by ordinary farming methods. The soils are deep, fertile and productive. The land is nearly level and there is little or no erosion. The minimum frost-free period is 100 days.

No area of land in Digby County meets these requirements.

Class II

The land in this class has a wide range of uses, for both agriculture and forestry. It has moderate limitations in use because of seasonal flooding, imperfect drainage, or light erosion, but these limitations are readily overcome. Simple management practices are sufficient to keep the land in production. The soils are moderately deep, have favorable textures and are easy to cultivate with power machinery. The topography ranges from level to gently rolling and there is not enough stone to interfere with cultivation. Lime and fertilizers are required for good crop yields.

The soils in Class II occupy 0.4 percent of the County area.

TABLE 7.—DESCRIPTION, SERIES AND ACREAGES OF SOILS OF DIGBY COUNTY IN LAND-USE CAPABILITY CLASS II, THOSE WITH MODERATE LIMITATIONS

Land-Use Capability	Subclass		Soil Series, Topography and Stoniness		Acres
	Limitations	Texture			
Nearly level to gently sloping land with moderate susceptibility to erosion. Soils have moderate depth, favorable texture. They can be cultivated with easily applied practices such as terracing, protective cover crops and simple water-management operations.	Moderate to light erosion with hoed crops, slowly pervious subsoil.	Moderately fine textured soils	Wolfville Kentville	B-1 B-1	2,064 576
					2,640
Total area					2,640

Class III

Land in this class is fairly good agricultural land but has moderately severe limitations. Erosion hazards range from light to moderate and may be severe on long C slopes. On slopes over 8 percent it is recommended that not more than one cultivated crop be grown in five years.

Other factors limiting the agricultural use of soils in this class are: imperfect drainage as in the Hantsport, Riverport, Annapolis, Deerfield, Danesville, Liverpool and Comeau series; shallowness as in the Bridgewater, Riverport, Halifax and Liverpool series; and stoniness as in nearly all of the moderately coarse textured soils, such as Halifax, Mersey, Yarmouth, Deerfield, Danesville and Liverpool. The coarse-textured Medway, Digby and Comeau soils have a low moisture-holding capacity and may be stony as well.

The soils in Class III occupy 16.7 percent of the County area.

TABLE 8.—DESCRIPTION, SERIES AND ACREAGES OF SOILS OF DIGBY COUNTY IN LAND-USE CAPABILITY CLASS III, THOSE WITH MODERATELY SEVERE LIMITATIONS

Land-Use Capability	Subclass		Soil Series, Topography and Stoniness		Acres
	Limitations	Texture			
Level to moderately steeply sloping land susceptible to moderate erosion. Soils have slow permeability, moderate overflow hazard, excessive wetness, shallowness or low moisture-holding capacity. Water management practices are more complex than for Class II. Choice of crops may be restricted.	Imperfect drainage or slope. Moderate to severe erosion with intertilled crops.	Moderately fine textured soils	Wolfville	C-1	1,664
			Kentville	C-1	832
				C-2	1,094
			Annapolis	B-1	2,389
				B-2	4,550
			Hantsport	B-1	214
				B-2	156
					10,899
	Imperfect drainage, shallowness or slope; slaty.	Medium-textured soils	Bridgewater	B-2	1,162
				C-1	5,266
				C-2	43,977
			Riverport	B-1	482
				B-2	27,712
				C-2	3,123
					81,722
	Imperfect drainage and/or slope. Stoniness, tillage problems.	Moderately coarse textured soils	Mersey	C-2	6,680
			Yarmouth	C-2	858
			Halifax	B-2	176
			Deerfield	B-2	1,171
			Danesville	B-1	608
			Liverpool	B-2	1,837
				C-2	498
					11,828
	Low moisture-holding capacity; cobbly.	Coarse-textured soils	Medway	B-1	30
				B-2	968
			Digby	B-1	192
				B-2	3,571
			Comeau	B-1	494
				B-2	1,496
				C-1	197
				C-2	136
					7,084
Total area					111,533

Class IV

The choice of crops that may be grown on soils of this class is severely limited by natural features of slope, wetness, or droughtiness. A large proportion of this land is best suited for pasture or forest. Soils of the Halifax series in this class are subject to erosion and are difficult to till or cultivate with conventional farm implements. The open, moderately coarse textured soils of this series have a low water-holding capacity. Medway and Digby soils on C slopes are very droughty and are better suited to forest. The deposits on which they have developed are of value for highway construction. Soils of the Mahone, Seely, Middlewood, Pitman, Aspotogan, Tiddville and Meteghan series are poorly drained and may be both shallow and stony. At present they are best used for forestry.

Soils in Class IV occupy 9.4 percent of the County area.

Class V

Land in this class is not generally suitable for cultivation. The class includes nearly level land that is stony, permanently wet, or frequently flooded.

Drainage is difficult and costly because of topography and location. Some areas can be used for pasture and, with the use of special equipment and techniques, a few areas of sphagnum peat could grow crops.

Soils of Class V occupy 3.9 percent of the County area.

TABLE 9.—DESCRIPTION, SERIES AND ACREAGES OF SOILS OF DIGBY COUNTY IN LAND-USE CAPABILITY CLASS IV, THOSE WITH SEVERE LIMITATIONS

Land-Use Capability	Subclass		Soil Series, Topography and Stoniness		Acres
	Limitations	Texture			
Steep slopes, severe erosion hazard, stoniness, imperfect drainage. Choice of crops may be limited. The number of years favourable for cultivated crops may be limited (1 in 6). Best suited to pasture, hay or forest.	Imperfect to poor drainage and/or shallowness.	Moderately fine textured soils	Mahone	B-1	197
					197
		Medium-textured soils	Seely	B-1	96
				B-2	62
			Middlewood	B-2	4,817
					4,975
		Moderately coarse to coarse-textured soils	Pitman	B-2	1,854
			Tiddville	B-2	40
			Aspotogan	B-2	3,189
			Meteghan	B-2	1,009
			Danteville	B-2	17,367
				C-2	3,493
			Roxville	C-2	2,525
					29,377
	Low moisture-holding capacity, stoniness, and/or slope.		Halifax	C-2	21,190
				D-2	88
					21,278
		Coarse-textured soils	Medway	C-1	638
				C-2	181
				D-2	385
			Digby	C-1	1,185
				C-2	5,006
					7,395
Total area					63,222

Class VI

This land is too steep, stony, droughty, shallow or wet for cultivation. Most areas are suitable only for forestry but occasional small clearings are used as rough pasture.

Land in this class occupies 20.9 percent of the County area.

Class VII

The land in this class is suitable only for forest. It includes steep, very stony land and covers 44.2 percent of the County area.

Ratings of Soils for Crops

In Table 13 the soils of Classes II, III and IV are rated on their suitability for production of the principal crops grown in the area. The ratings are based largely on yield observations in the field, on known characteristics of the soils such as texture, structure, stoniness and drainage and on climatic factors that

TABLE 10.—DESCRIPTION, SERIES AND ACREAGES OF SOILS OF DIGBY COUNTY IN LAND-USE CAPABILITY CLASS V, THOSE NOT GENERALLY SUITABLE FOR CULTIVATION

Land-Use Capability	Subclass		Soil Series, Topography and Stoniness		Acres
	Limitations	Texture			
Nearly level land with permanent wetness, stoniness, frequent overflow. Grazing or forestry is best use.	Limited by excessive wetness.	Moderately fine textured soils	Mahone	A-1	466
			Salt Marsh		1,446
					1,912
		Medium-textured soils	Seely	A-1	160
				A-2	2,133
			Middlewood	A-1	176
				A-2	936
					3,405
		Moderately coarse to coarse-textured soils	Pitman	A-2	563
			Tiddville	A-2	82
			Aspotogan	A-2	240
			Meteghan	A-1	38
				A-2	342
					1,265
		Organic deposits	Sedge Peat		4,960
			Sphagnum Peat		11,322
			Swamp		3,123
					19,405
Total area					25,987

TABLE 11.—DESCRIPTION, SERIES AND ACREAGES OF SOILS OF DIGBY COUNTY IN LAND-USE CAPABILITY CLASS VI, THOSE SUITABLE FOR GRAZING OR FORESTRY

Land-Use Capability	Subclass		Soil Series, Topography and Stoniness		Acres
	Limitations	Texture			
Steep, stony, eroded, shallow, wet and/or droughty land suitable for grazing or forestry with moderate limitations.	Limited by slope, stoniness, rock outcrops and/or shallowness.	Medium to moderately coarse-textured soils	Bridgewater	C-3	2,675
				E-2	2,550
			Mersey	C-3	2,510
			Halifax	B-3	2,469
				C-3	40,415
				D-3	4,411
			Gibraltar	B-3	1,978
				C-3	3,979
			Rossway	C-3	862
				D-3	546
					62,395
	Imperfectly drained, stony land.		Danesville	B-3	27,771
				C-3	7,170
			Riverport	B-3	2,016
			Liverpool	B-3	9,678
			Roxville	C-3	3,275
			Bayswater	B-3	6,454
					56,364
	Poorly drained, stony land.		Pitman	B-3	3,804
			Middlewood	A-3	48
				B-3	2,727
			Tiddville	B-3	1,045
			Aspotogan	A-3	2,435
				B-3	11,163
					21,222
Total area					139,981

TABLE 12.—DESCRIPTION, SERIES AND ACREAGES OF SOILS OF DIGBY COUNTY IN LAND-USE CAPABILITY CLASS VII, THOSE SUITABLE MAINLY FOR FOREST

Land-Use Capability	Subclass		Soil Series, Topography and Stoniness		Acres
	Limitations	Texture			
Very stony, steep, rocky, shallow, droughty and/or swampy land. Chiefly useful for forestry and wildlife. Limited areas suitable for grazing.	Very stony land.	Medium-textured to moderately coarse textured soils	Rossway	D-4	35,066
			Gibraltar	B-4	181,915
				C-4	2,423
					219,404
	Imperfectly drained, very stony land.		Roxville	C-4	1,978
				D-4	491
			Bayswater	B-4	50,730
			Danesville	B-4	2,168
					55,367
	Poorly drained, very stony land.		Tiddville	B-4	951
			Aspotogan	A-4	7,075
				B-4	5,583
					13,609
Total area					288,380

TABLE 13.—SUITABILITY[1] FOR FARM CROPS OF SOILS OF DIGBY COUNTY IN LAND-USE CAPABILITY CLASSES II, III AND IV

Soil Series	Acres	Hay	Grain	Pasture	Potatoes	Vegetables
Class II Good Crop Land						
Wolfville	2,064	G	G	G	F	F-G
Kentville	576	F-G	F-G	G	G	G
Class III Good to Fair Crop Land						
Wolfville	1,664	G	G	G	F	F
Kentville	1,926	F-G	F-G	F-G	F	F
Annapolis	6,939	F-G	F	F-G	F	F
Hantsport	370	F-G	F	F-G	F-P	F
Bridgewater	50,405	F-G	F-G	G	G	F-G
Riverport	31,317	F-G	F	F-G	F	F
Mersey	6,680	F-G	F-G	F-G	F-G	F-G
Yarmouth	858	F-G	F-G	F-G	F-G	F-G
Halifax	176	F-G	F-G	F-G	F-G	F-G
Deerfield	1,171	G	F-G	G	F	F
Danesville	608	G	F	G	F	F
Liverpool	2,335	F-G	F	F-G	F	F
Medway	998	F	F	F-P	F-G	F
Digby	3,763	F	F	F	F-G	F
Comeau	2,323	F-G	F	F-G	F-P	F-P
Class IV Fair to Poor Crop Land						
Mahone	197	F-P	P	F	U	U
Seeley	158	F-P	P	F	U	U
Middlewood	4,817	F-P	P	F	U	U
Pitman	1,854	F	P	F	U	U
Tiddville	40	F-P	P	F	U	U
Aspotogan	3,189	F-P	P	F	U	U
Meteghan	1,009	F-P	P	F	U	U
Danseville	20,760	F	F-P	F-G	F	F
Roxville	2,525	F	F-P	F	F-P	F-P
Halifax	21,278	F	F-P	F	F-P	F-P
Medway	1,204	F-P	F-P	F-P	F-P	F-P
Digby	6,191	F-P	F-P	F-P	F	F-P

G—good; F—fair; P—poor; U—unsuitable.

are known to limit the growth of certain crops. Such ratings are by no means infallible since sufficient information on yields and management practices were not obtained or are not available.

The ratings are for crops commonly grown in the County. For brevity some crops are grouped. Thus a soil may be rated for general vegetable production when it is known that different vegetables have widely different environmental requirements. A soil may be well suited to lettuce, cauliflower, beans, peas, squash, etc., and entirely unsuitable for carrots or parsnips because of fragments of shale or gravel that will cause deformities in root development and thus render unmarketable a large part of the crop.

In the above ratings, areas of some series occur in two land-use classes. This is because stoniness, rock outcrops, depth to bedrock or topographic differences have a marked effect upon land use. The poorly drained soils in Class IV could in some cases be drained and thus converted into productive agricultural soils. Similar improvements could be made on salt marsh with adequate dyking and drainage. The ratings are very general and apply broadly rather than to particular areas that may be better or worse than average for specific crops.

DISCUSSION OF ANALYTICAL DATA

A number of representative profiles and of surface or cultivated soils were sampled for chemical and physical analysis. The cultivated (Aa) samples were taken, where possible, from unimproved permanent pastures, or fields where growth indicated no treatment for a number of years. Analyses of these samples are shown in Tables 14 and 15 at the end of this report.

Loss on Ignition

To determine loss on ignition, an oven-dried sample of soil is held at 700°C. for one hour. The material volatilized is not all organic matter, but the determination gives a rough measure of the humus content of the soil. All the Aa horizons analyzed were fairly high in organic matter. The Digby soils were the lowest of those sampled. Most of the soils were well above the average for the province in organic content. There should be little difficulty in maintaining a reasonable level of humus in Digby County soils while barnyard manure is used and good soil management practices are followed.

Soil Reaction or pH

Most of the soils in the area are strongly acid and require liming for satisfactory production of most crops. The Digby series profile was only moderately acid but this may have been due to past liming of the sampled area.

Total Nitrogen

Total nitrogen in the soil is closely related to the level of organic matter and, where the latter constituent is high, total nitrogen is invariably high as well. Available nitrogen, however, varies markedly with soil temperature, bacterial activity, stage of plant growth and soil moisture, and can change greatly in a short time. The amount of organic matter in these soils suggests that for most slow-growing crops the nitrogen level is adequate. However, for nonleguminous crops, applications of nitrate fertilizer in the early spring should prove beneficial. For high-value crops it will usually be profitable to supply nearly all of the nitrogen requirements with commercial fertilizers. Low-value, slow-growing crops can obtain a large proportion of their nitrogen from natural organic sources. Growing of leguminous crops should be encouraged in Digby County.

Available Calcium and Magnesium

In the five profiles analyzed, the Rossway and Digby series were the highest in available calcium and magnesium, particularly in the cultivated layers. The Bridgewater series was the lowest in both calcium and magnesium and is likely to show marked deficiencies of these elements under intensive cropping. Liming with dolomitic limestone will raise the supply of magnesium and calcium to an adequate level for most crops. For some crops, such as potatoes, it may be necessary to supply additional magnesium, as magnesium sulphate.

Available Potassium

Available potassium is low in most of the soils in the forested areas. Some cultivated soils have a fairly good supply of this element but the Digby and Bridgewater soils are low throughout the profile. Commercial fertilizers may be used to supply the potassium needs of the crop. Well-stored barnyard manure is an excellent source of this element.

TABLE 14.—CHEMICAL AND PHYSICAL ANALYSES OF REPRESENTATIVE SOIL PROFILES OF DIGBY COUNTY

Horizon	Depth in Inches	Loss on Ignition %	Total Carbon %	pH	Total N %	Total P_2O_5 %	Total SiO_2 %	Total R_2O_3 %	Total Fe_2O_3 %	Total CaO %	Total MgO %	Free Fe_2O_3 %	me/100 gm. of soil: Exchange Capacity	Exchangeable: Ca	Mg	K	Gravel %	Sand 2–.05 mm %	Silt .05–.002 mm %	Clay below .002mm %
Rossway Sandy Loam																				
Aa	0–6	19.5	.....	5.5	0.58	0.19	45.5	27.9	9.0	2.95	3.30	.....	30.8	5.00	1.80	0.39	20.5	57.7	35.0	7.3
L-H	4–0	88.5	46.80	3.5	1.69	0.18	6.8	2.1	0.8	0.92	0.69	.....	108.4	2.50	2.99	0.28	.....	.....	.....	.....
Ae	0–1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bfh_1	1–4	19.5	8.65	4.6	0.32	0.09	52.0	23.3	8.5	1.89	2.32	.....	31.0	0.09	0.55	0.05	19.4	69.9	29.1	1.0
Bfh_2	4–12	18.0	6.60	4.9	0.27	0.04	51.0	24.4	7.4	2.25	2.57	.....	25.4	0.26	0.25	0.06	25.7	71.8	25.6	2.6
BC	12–20	10.4	3.70	5.3	0.17	0.08	59.5	22.5	7.5	2.81	3.65	2.08	14.2	0.24	0.28	0.07	47.8	64.9	32.0	3.1
C	20+	3.1	.46	5.9	0.04	0.11	62.3	22.5	9.0	5.24	4.86	0.69	4.1	0.58	0.39	0.09	41.6	69.9	26.0	4.1
Digby Loamy Sand																				
Aa	0–6	9.9	3.36	6.1	0.24	0.13	70.6	16.0	3.9	0.72	0.99	1.56	13.0	4.43	0.94	0.11	9.6	76.5	20.3	3.2
Ae	6–8	2.0	.92	6.2	0.06	0.04	83.5	10.9	1.9	0.29	0.49	0.58	4.7	2.54	1.28	0.07	11.4	71.3	20.0	8.7
Bf_1	8–16	8.0	1.48	5.8	0.09	0.08	68.7	19.4	4.6	0.62	1.32	1.25	9.9	0.46	0.31	0.08	13.0	87.7	10.3	2.0
Bf_2	16–22	4.5	1.04	5.7	0.08	0.07	74.2	17.1	4.8	0.72	1.41	0.76	5.1	0.74	1.19	0.10	5.8	93.6	5.4	1.0
C	22+	5.4	1.62	5.9	0.09	0.11	72.1	18.2	4.2	0.76	1.33	.....	6.9	0.69	0.28	0.13	51.2	95.1	4.9	0.0
Wolfville Loam																				
Aa	0–6	11.6	4.79	5.2	0.33	0.19	64.4	20.5	5.6	0.67	1.32	2.43	20.6	1.94	0.49	0.25	22.7	42.9	47.4	9.7
L-H	2–0	91.0	.....	3.3	1.04	0.15	5.1	1.8	.....	0.38	0.52	.....	.....	1.44	2.33	0.28	.....	.....	.....	.....
Ae	0–1	8.5	.....	3.8	0.15	0.06	67.7	19.9	.....	0.36	0.75	.....	.....	0.61	1.72	0.11	11.1	24.7	36.0	39.3
Bf_1	1–10	17.2	.....	5.1	0.28	0.07	48.8	30.9	.....	0.35	1.56	.....	.....	0.25	0.75	0.15	17.6	63.3	23.4	13.3
Bf_2	10–20	4.0	.....	5.0	0.05	0.12	72.5	19.0	.....	0.46	1.33	.....	.....	0.19	0.47	0.06	22.4	55.8	24.5	19.7
C	20+	3.3	.17	5.4	0.05	0.08	68.6	23.1	5.8	0.46	1.46	1.84	10.9	3.25	3.41	0.12	25.6	58.1	14.9	27.0
Bridgewater Silt Loam																				
L-H	2–0	91.4	50.63	3.5	1.69	0.18	5.1	1.9	0.2	0.36	0.31	.....	149.5	1.35	2.11	0.09	.....	.....	.....	.....
Ae	0–2	3.4	0.92	3.7	0.08	0.11	72.3	20.7	1.9	0.19	1.13	1.40	4.4	0.18	0.61	0.11	11.5	30.1	52.0	17.9
Bfh	2–4	8.3	2.74	4.9	0.14	0.07	61.8	24.7	7.0	0.19	2.03	2.69	10.6	0.09	0.28	0.01	16.6	42.1	51.6	6.3
Bf_1	4–13	4.7	0.70	5.3	0.05	0.13	63.6	26.1	7.2	0.38	2.19	2.47	3.9	0.12	0.14	0.01	23.2	38.5	41.1	20.4
Bf_2	13–23	4.8	0.80	5.3	0.07	0.12	62.3	27.4	7.6	0.31	2.24	2.64	4.1	0.11	0.17	0.03	20.1	40.0	49.0	11.0
C	23+	4.0	0.40	5.2	0.05	0.13	63.2	26.4	3.5	0.39	2.64	2.29	2.9	0.11	0.14	0.03	22.7	37.0	49.0	14.0

Available Phosphorus

The level of available phosphorus is very low in all soils in the County. It is usually necessary to supply this element in large amounts to ensure satisfactory growth of all crops. Barnyard manure supplies some, but seldom enough for crop needs. Additional sources of phosphorus are commercial fertilizers and slag by-products of the steel industry.

Cobalt

Cobalt deficiency produces no known effect on plants, but a low level in forage causes wasting disease in ruminants. This has been known to occur in Digby County, particularly in coastal areas. The condition can be corrected by feeding cobaltized salt to sheep and cattle or by applying cobalt chloride to the soil.

TABLE 15.—AVAILABLE NUTRIENTS IN POUNDS PER ACRE IN REPRESENTATIVE SOIL PROFILES OF DIGBY COUNTY

Series	Horizon	Depth in Inches	Ca	Mg	K	P
Rossway	Aa	0-6	2,000	432	304	10
	L-H	4-0	96	69	21	4
	Ae	0-1	.....	.....	.....	.....
	Bfh_1	1-4	36	127	39	6
	Bfh_2	4-12	104	60	46	4
	BC	12-20	96	67	54	4
	C	20+	232	93	70	14
Digby	Aa	0-6	1,772	225	85	8
	Ae	6-8	1,016	307	54	4
	Bf_1	8-16	184	74	62	5
	Bf_2	16-22	296	285	78	6
	C	22+	276	67	101	6
Wolfville	Aa	0-6	776	117	195	18
	L-H	2-0	55	54	21	3
	Ae	0-1	244	413	85	2
	Bf_1	1-10	100	180	117	4
	Bf_2	10-20	76	112	46	4
	C	20+	1,300	818	93	14
Bridgewater	L-H	2-0	52	48	6	3
	Ae	0-2	72	146	85	2
	Bfh	2-4	36	2	8	0
	Bf_1	4-13	44	7	23	2
	Bf_2	12-23	48	2	8	2
	C	23+	44	7	23	8

SUMMARY

Much of Digby County is a broad, undulating plain that slopes upward from St. Mary's Bay to a height of 500 feet in the east. Except for a small lowland area between St. Mary's Bay and Annapolis Basin, the northern part of the County is rimmed by the portions of the North Mountain known as Digby Neck, Long Island and Briar Island.

Granite and quartzite underlie much of the eastern half of the County, and basalt underlies the North Mountain area. These rocks resist weathering and consequently the soils formed from them are thin and stony. However, along the shore of St. Mary's Bay and near Digby, the soils have developed on tills derived from less resistant rock materials, such as slates, shales and sandstone. Fairly large areas are sufficiently free of stone to cultivate and, for this reason, are the important farming sections of the County. Altogether 72 percent of Digby County is nonagricultural land. The soil is too stony, too shallow, or too poorly drained for crops other than forest. Less than one percent of the land area of the County can be classed as good agricultural land; about 18 percent is good to fair and 9 percent is fair to poor for agriculture. In the latter two classes the chief limiting factors in land use are stoniness and drainage.

Altogether 28 soil series or land types are described and mapped. They occur in areas ranging from 270 acres for the Hantsport series to 190,295 acres for the Gibraltar series. The most useful agriculturally are the Bridgewater, Kentville, Annapolis and Wolfville series. Substantial areas of Bridgewater soils, at present in forest, are potentially useful for agriculture.

The chief crops grown in the County are hay and grass. Some acreage is planted in grain, but often is sown mainly as a nurse crop for seeding down an area to hay. Some roots, vegetables, small fruits and tree fruits are also grown, but the acreage in these crops is a small part of the total area under cultivation.

All the soils are well supplied with organic matter but are sour and relatively infertile. Lime and commercial fertilizers in adequate amounts are needed to grow satisfactory crops.

GLOSSARY

Alluvium—Sediments deposited by streams.

Available nutrients—Plant nutrients in soluble form, i.e., readily available for absorption by plant roots.

Boulders—Rock fragments over two feet in diameter.

Cobbles—Rounded or partially rounded rock fragments from 3 to 10 inches in diameter.

Color—Soil colors are measured by comparison with a Munsell color chart. The Munsell system specifies the relative degrees of the three simple variables of color: hue, value and chroma. For example: 10YR 6/4 is a color with a hue of 10YR, a value of 6 and a chroma of 4.

Drift—Material of any sort moved from one position to another. The term is most commonly used for material deposited by glacial action.

Ferralitic Eluviated Gleysols—Soils with organic horizons up to 6 inches thick, a thin (2 inches thick) or absent Ah, a mottled strongly gleyed Aeg horizon and a mottled, strongly gleyed Bfg horizon.

Glaciofluvial material—Glacial material sorted and deposited by water that originated mainly from melting glaciers.

Gleyed Podzols—Podzol soils with mottling or other discolorations due to periodic wetness in the Ae and Bf horizons.

Gleyed Regosols—Imperfectly drained Regosols.

Gravel—Rock fragments from 2 mm. to 3 inches in diameter.

Horizon—A layer in the soil profile approximately parallel to the land surface with more or less well defined characteristics that have been produced through the operation of soil-forming processes. The major organic horizons are defined as follows:

L—An organic layer characterized by the accumulation of organic matter in which the original structures are definable.

F—An organic layer characterized by accumulation of partly decomposed organic matter in which the original structures are discernible with difficulty.

H—An organic layer characterized by accumulation of decomposed organic matter in which the original structures are undefinable.

The major mineral horizons are defined as follows:

A—A mineral horizon or horizons formed at or near the surface in the zone of maximum removal of materials in solution and suspension and/or maximum *in situ* accumulation of organic matter. It includes (1) horizons in which organic matter has accumulated as a result of biological activity (Ah); (2) horizons that have been eluviated of clay, iron, aluminum and/or organic matter (Ae); (3) horizons dominated by 1 and 2 above but transitional to the underlying B or C (AB or A and B); (4) horizons markedly disturbed by cultivation or pasturing (Aa).

B—A mineral horizon or horizons characterized by one or more of the following: (1) an illuvial enrichment (exclusive of dolomite or salts more soluble in water) of silicate clay, iron, aluminum, or organic matter (Bt, Bf, Bh, Bfh); (2) a concentration of weathering products believed to have been formed *in situ* (Bt); (3) the removal of dolomite and salts more soluble in water (Bm); (4) an oxidation of sesquioxides that give a conspicuously darker, stronger, or redder color than overlying and/or underlying horizons in the same sequum (Bmf); (5) a prismatic or columnar structure characterized by the presence of exchangeable sodium (Bn).

C—A mineral horizon or horizons comparatively unaffected by the pedogenic processes operative in A and B, excepting (1) the process of gleying and (2) the accumulation of dolomite and salts more soluble in water (Ck, Cs, Cg, and C).

The mineral horizons described in this report are denoted by the following lower-case suffixes:

e—A horizon characterized by the removal of clay, iron, aluminum or humus. Usually lighter-colored than the layer below.

f—A horizon enriched with hydrated iron.

g—A horizon characterized by reduction and gray colors, often mottled.

h—A horizon enriched with organic matter. It must show at least one Munsell unit of value darker than the horizon immediately below.

j—A horizon whose characteristics are weakly expressed.

k—A horizon enriched with carbonate.

m—A horizon characterized by the loss of water-soluble materials only.

p—A relic (not currently dynamic) horizon (used as a prefix).

s—A horizon enriched with salt, including gypsum.

t—A horizon enriched with silicate clay.

Litholic changes are indicated by roman-numeral suffixes. If more than one lower-case suffix is required and if one only is a weak expression, then the j is linked to that suffix with a bar, i.e., Bmfj. In bisequa profiles the first sequum designations are bracketed.

Mor—Unincorporated organic material that rests with little mixing on the underlying mineral or organo-mineral horizon.

Mottles—Irregularly marked spots or streaks, usually yellow or orange, sometimes blue. Mottling indicates poor aeration and lack of good drainage.

Orthic Gleysols—Soils with organic horizons less than 6 inches thick, a thin (2 inches thick) or absent Ah horizon underlain by a strongly gleyed, noncalcareous horizon or horizons.

Orthic Podzols—Soils with organic surface horizon or horizons (L-H), a light-colored, eluvial horizon (Ae) more than one inch thick and a friable Bfh or Bf horizon of high chroma. A Bh subhorizon containing more than 10 percent organic matter is lacking or less than two inches thick.

Orthic Regosols—Soils lacking any horizon development or with thin or weak Ah horizons and without visible evidence of salts and gleying. (Weak Ah horizons are defined as Ah horizons that will produce Aa horizons 5 inches thick and one Munsell unit darker in value than the C horizon.)

Parent material—The unaltered or essentially unaltered material from which the soil profile develops.

pH—The intensity of acidity or alkalinity expressed as the logarithm of the reciprocal of the hydrogen ion concentration. With this notation, pH 7.0 is neutral; lower values indicate acidity, and higher values, alkalinity.

Potential evapotranspiration—The amount of water that would be transferred from the soil to the atmosphere by evaporation and transpiration if it were constantly available.

Profile—A vertical section of a soil through all its horizons and extending into the parent material.

Relief—The elevation or inequalities of the land surface when considered collectively.

Soil consistence—The attributes of soil material expressed by the degree and kind of cohesion and adhesion or by the resistance to deformation or rupture.

Soil structure—The aggregation of primary particles into compound particles, which are separated from adjoining aggregates by surfaces of weakness.

Solum—In normal soils the solum includes the A and B horizons, or the part of the soil profile above the parent material.

Till—That part of glacial drift deposited directly by ice, and transported little or not at all by water; generally unstratified.

MAPS
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